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This study tested Fiedler's contingency model of leadership effectiveness on 86 nursing students in a large midwestern hospital. Fourteen individuals representing the task oriented and relationship-oriented leadership styles and two levels of sociometric status were randomly designated as leaders for small groups. The groups worked on five structured and five unstructured nursing problems in 10 fifty-minute sessions. The hypothesis that leaders of different styles use different kinds of verbal statements in communicating with their group members was not confirmed. Rather, a difference in the amount of verbal involvement was suggested. Task-oriented leaders talked significantly more to their group members. Superior performance of the groups led by relationship-oriented leaders on both types of problems did not support the hypothesis that relationship-oriented leaders perform more effectively on unstructured problems. It was suggested that future research include measures to test the interpretation that the overall nursing philosophy outweighs the type of task. All instruments are presented in the appendixes. (JK)

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THE EFFECTS OF DIFFERENT LEADERSHIP STYLES ON GROUP PERFORMANCE: A FIELD EXPERIMENT

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THE EFFECTS OF DIFFERENT LEADERSHIP STYLES ON GROUP PERFORMANCE: A FIELD EXPERIMENT

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PREFACE

This study, completed by Anthony J. Reilly as a doctoral dissertation under the direction of and in cooperation with Professors Arthur C. MacKinney, Edwin B. Hutchins, and Thomas F. Lyons of Iowa State University's Psychology Department, received the fifth Annual James McKeen Cattell Award from the Division of Industrial Psychology of the American Psychological Association. This award is given for outstanding development of a research design, encouraging psychologists to make creative and rigorous approaches to industrial problems.

Anthony Reilly's study discusses traditional definitions of leadership, the development of the interactional theory and the concepts of Fred Fiedler, a well known psychological theorist. Effects of different leadership styles on group performance were studied in a field setting involving 86 subjects who were nursing students in a large midwestern hospital.

Anthony Reilly is continuing his career with the Center for Research on Utilization of Scientific Knowledge, Institute for Social Research, and the Department of Psychology, University of Michigan, Ann Arbor.

Edward B. Jakubauskas, Director
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SUMMARY

THE EFFECTS OF DIFFERENT LEADERSHIP STYLES ON GROUP PERFORMANCE: A FIELD EXPERIMENT

Anthony Joseph Reilly III

Under the supervision of Arthur C. MacKinney
From the Department of Psychology
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Fiedler's contingency model of leadership effectiveness was tested in a field experiment. Subjects were 86 nursing students from a large midwestern hospital.

The meaning of Fiedler's "psychological distance" was investigated by determining the nature of the verbal behaviors of group leaders.

Results of the study were as follows:

1. With regard to the "discrimination hypothesis" there was no evidence that differently styled leaders varied in the number of responses made to specific individuals in their respective groups. Furthermore, there were no significant differences among types of leaders with respect to the extent to which they responded qualitatively differently (using different verbal categories) to different members of their groups. Also, there were no significant differences among the types of leaders in the variance concerning change in the number of responses made to various individuals in their groups. Thus, the discrimination hypothesis was not supported in this study.

2. High LPC scores (representing relationship-oriented leaders) were found to be positively correlated with group effectiveness, regardless of whether the tasks were structured or unstructured. Leader-group member

relations, as measured by sociometric questions, were not found to significantly influence group effectiveness.

3. It was found that task-oriented leaders (leaders who obtained low LPC scores) addressed their group members relatively early in the problem-solving sessions, whereas high LPC, relations-oriented leaders addressed their group members relatively later in the session. On the average, however, there was no evidence that the two types of leaders addressed their groups with different frequency.

4. It was found that, in general, task-oriented leaders interacted more with their group members than did relation-oriented leaders. Moreover, it was found that category 6 (gives procedural suggestions), category 14 (disagrees, maintains a contrary position), and category 19 (asks for repeat, clarification) were used more by the relations-oriented leaders when addressing individuals, whereas the remaining categories were used more frequently by task-oriented leaders. Judging from the content of these categories these results suggest that high LPC leaders were more directive and low LPC leaders were more supportive.

For this study, the behaviors of the leaders, as manifested through their verbal communication patterns, did not support Fiedler's differential descriptions of relationship-oriented and task-oriented leaders.

It is suggested that the overall nursing philosophy emphasized in this particular organization outweighed the specific type of task which the groups worked on.

It is suggested that follow-up research include not only verbal behaviors in an attempt to better understand the meaning of "psychological distance." It is hypothesized that the superiority of the relationship-oriented leaders may be attributed to a higher-order organizational variable, which outweighs the particular type of task being worked on. It is suggested that this factor of organizational climate be included in future research on the theory.

TABLE OF CONTENTS

	Page
INTRODUCTION	1
METHOD	28
RESULTS AND DISCUSSION	43
SUMMARY AND CONCLUSIONS	76
REFERENCES	80
ACKNOWLEDGMENTS	83
APPENDIX A	85
APPENDIX B	88
APPENDIX C	90
APPENDIX D	94
APPENDIX E	97
APPENDIX F	108
APPENDIX G	110
APPENDIX H	113
APPENDIX I	118
APPENDIX J	120

INTRODUCTION

Among the various topics studied by individuals interested in group processes, the nature of leadership and the causes of performance are among those receiving considerable attention. Even before empirical research data were available, the assumption was made that morale, group effectiveness, and leadership are all intimately related to each other. In addition to supporting this assumption, research findings have shown that the relations among these group variables are exceedingly complex. Nevertheless, in spite of this complexity, there is still a great need to consider the topics of leadership and group performance simultaneously. The research proposed in this paper will be an attempt to clarify the functional relationships between leadership style and group effectiveness. The writer will dwell for a few moments upon different historical approaches to the concept of leadership and then discuss one particular approach to identifying leadership style, namely that of Fred Fiedler (1964), and how his variables reflecting leadership were manipulated experimentally in a field setting by the writer.

Leadership: An Interactional Phenomenon

The definition of leadership has changed over the years. Cowley (1928) suggested that leadership is not a single trait but a combination of numerous traits. He went on to say that an adequate study of leadership should produce a list of traits which go together to make a leader. This concept would define leadership according to specific traits. One possessing these traits would, according to this idea, be a leader. This approach at first glance might appear to some to be a valid one. On a theoretical level one may attempt to put together and try to explain the descriptive framework of leadership. However, when different investigators tried to elicit the type of leadership behavior specified by this definition, the approach was seen to be inadequate. This is due to the fact that certain traits of leadership behavior effectively exhibited in one situation may be ineffective in a different situation. This finding suggested that Cowley's definition of leadership would not be applicable to all situations but would be limited to specific situations in which those particular traits are needed.

Shartle (1956), after reviewing leadership studies, concluded that the trait theory approach is a less satisfactory definition of leadership than one stated in terms of performance. He suggested that the term trait be omitted altogether in the definition. In his discussion Shartle made the following comment:

> We may think of leadership as something which influences persons. Therefore, performance that influences others would be leadership performance. More specifically it would be acts which influence the acts of others, that is, performance that results in others acting or responding in an attempt to reach the same goal. Leadership is therefore judged in terms of what others do.[1]

This approach can be considered an important one in view of the fact that it relates leadership to the realm of interaction between the leader and those he influences.

A different approach to defining leadership was offered by Redl (1942). He perceived leadership as relationships existing among people. Different types of leadership behavior would involve different types of relationships. Redl introduced the concept of "central person" in his definition and differentiated ten types of emotional relationships between the central person and other members comprising the group, the term "leadership" being used to denote only one of these relationships.

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[1] Shartle, 1956, p. 106.

> The term leader is restricted to that relationship which is characterized by love of the members for the central person, leading to incorporation of the personality of the central person in the ego ideal of the followers, i.e., they wish to become the kind of person he is.[2]

Although this definition of leadership has little in common with one's usual concept of the term and is quite restrictive in scope, it does use as its differentiating factor the nature of the emotional relationship existing between the leader and the rest of the group members. In view of the nature of man's emotional constitution this approach seems to provide a model worthy of investigation. One might conclude that if one could measure directly the emotional climate existing between leader and followers, perhaps valid prediction could be made about the effects of different types of leadership on performance or some other criterion.

Pigors' (1935) definition seemed to be a combination of Shartle's and Redl's theories. He defined the term as

> a concept applied to the personality-environment relation to describe the situation when a personality is so placed in the environment that his will, feeling, and insight direct and control others in the pursuit of a common cause.[3]

The importance of environment should not be underestimated when considering leadership. Although it may at first appear that leadership is solely a characteristic of the person who exercises it, this is not the case. Much research in industrial and military settings has led to the conclusion that a leader is able to lead a particular group only if the characteristics of the group are of such a nature, or create an environment, which permit the leader to carry out his leadership behavior. The importance of interaction between the leader and followers is apparent.

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[2] Redl, 1942, p. 585.

[3] Pigors, 1935, p. 12.

The definition of leadership submitted by Fleishman (1961) also supports the interaction theory. According to Fleishman's thinking the most fruitful approach is to think of leadership in terms of acts which influence other people. This idea agrees with Shartle (1956), Redl (1942), and Pigors (1935), as well as with others. Implied in all of these theories is the idea that leadership cannot be separated from the actions of the group in which the leader functions. Fleishman pointed out, as Shartle did, that a leader is effective only to the degree that the group under him is influenced by his behavior to move toward some shared goal. This implies that a person officially designated as "leader" may or may not be one, depending upon how much he influences the members of the group in reaching a common goal. On the other hand, other individuals in a given group, although not officially designated as leaders, may in fact be. Thus one can define leadership only in terms of its effects on the behavior of individuals in the group.

Fiedler's Orientation to Leadership

The classic study by Lewin and Lippitt (1938) gave impetus to several investigators who began to center considerable attention on clusters of leadership attitudes and behaviors. Such labels as autocratic versus democratic, authoritarian versus equalitarian, production versus human relations, and task versus group oriented--all of these descriptive terms have been used to suggest important but different attributes of leadership style and have furthered the development of leadership theory. Responding to the stimulus provided by Lewin, Fiedler (1964) has also contributed significantly to leadership theory in the development of two styles of leadership--task-oriented and relation-oriented.

Fiedler has defined leadership as a "process of influencing others for the purpose of performing a shared task" (Fiedler, 1968, p. 362). Implied in this definition is the idea that one person--the leader--motivates and directs members of the group to reach some shared goal.

Fiedler and his associates have used two measures to tap the different styles of exerting influence in a situation which calls for leadership behavior. These interpersonal measures are referred to as Assumed Similarities between Opposites scores (ASo) and the esteem for the least preferred co-worker scores (LPC). ASo and LPC scores are highly correlated (.80 to .93) and are used interchangeably (Fiedler, 1967). Both have been used in his research program to measure what has often been referred to as "psychological distance." In Fiedler's early work it was the assumed similarity a leader saw between the worker with whom he worked best and the worker with whom he worked least well. To obtain the ASo score the leader was asked to describe (a) the person he considered his most preferred co-worker (MPC) and (b) the person he considered his least preferred co-worker (LPC). It is important to note that the LPC does not have to be someone with whom the rater is working at the time the rating is made. Rather, the person chosen may be anyone from the rater's past or present work relationships.

The descriptions of the MPC and LPC are made on a six- or eight-point bipolar adjective checklist similar in form to Osgood's Semantic Differential (1957). The form of the checklist appears in Appendix A.

ASo scores are derived by having the rater assign a value to each of 20 items which he checks along a continuum. Each item is scored from 8 (a most favorable rating) to 1 (a least favorable rating). A measure of profile similarity is computed between the two descriptions (MPC and LPC). An individual who describes his most and least preferred co-workers as quite similar receives a high assumed similarity score, while one who strongly distinguishes between these two "opposites" on his co-worker continuum will receive a low score. The LPC is simply one part of ASo, found by summing the item scores on the scale sheet describing the least preferred co-worker. A high total LPC score indicates a favorable view of the worker, while a low score indicates a less favorable, more critical view (see Table 1).

> A person with a high LPC score tends to see even a poor co-worker in a relatively favorable manner ("Even if I cannot work with him, he may still be a very nice and valuable person"). A low LPC leader perceives his least preferred co-worker in a highly unfavorable, rejecting manner ("If I cannot work with him, he is probably just no good").[4]

In general the high-LPC leader, through his description of his least preferred co-worker, perceives him to be reasonably intelligent, friendly, etc. It is as if the leader is saying that he is distinguishing between the person being rated and the way he works at a job. The low-LPC leader says in effect that the person with whom he works least well is unintelligent, unfriendly, etc. (Fiedler, 1967). Fiedler, in the same reference, states

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[4] Fiedler, 1968, p. 363.

Table 1. Computation of ASo and LPC Scores[a]

The computation of ASo and LPC scores is quite simple. A brief numerical example is presented here to illustrate the method of computing these scores. Let us consider two descriptions, both by subject A. The first is the description of his most preferred co-worker (MPC), the second is the description of his least preferred co-worker (LPC). We have scored each scale from the most favorable point of 8 to the least favorable of 1, thus:

friendly:		x							: unfriendly
	8	7	6	5	4	3	2	1	

An individual who checks his most preferred co-worker as above would be assigned a score of 7 on this particular item of the MPC scale. Let us now compare, say, four items which subject A has marked to describe his most and his least preferred co-workers:

	Scores of A Describing His			
Scale Item	Most Preferred Co-worker	Least Preferred Co-worker	Difference between MPC & LPC	Squared Difference
1 Pleasant-Unpleasant	7	3	4	16
2 Friendly-Unfriendly	4	4	0	0
3 Accepting-Rejecting	8	2	6	36
4 Helpful-Frustrating	6	5	1	1
		LPC=14		D^2=53

$$D = \sqrt{D^2} = 7.28^{b}$$

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[a] Adapted from Fiedler, 1967b, p. 42.

[b] A high difference score, D, indicates a low Assumed Similarity between Opposites (ASo).

that the implicit personality theory of the high-LPC person separates work performance from one's personality, while the low-LPC person associates an individual's poor performance on a job with undesirable personality characteristics.

The leader's psychological distance score has been investigated in a variety of settings. Initially, real-life groups were used, and objective measures were used to assess group performance. These groups included student basketball and surveying teams (Fiedler, 1954), military tank and bomber crews (Fiedler, 1955), and boards of directors of small consumer cooperative organizations (Godfrey, Fiedler, and Hall, 1959). Fiedler's later research has included a greater number of laboratory as distinct from real-life groups, and the range of subjects studied has varied from women susceptible to hypnosis (Fiedler, 1967) to church leaders (Fiedler, 1961).

Fiedler's earlier findings suggested that the most effective groups had leaders who were quite psychologically distant from their group members; that is, they saw a greater distance between their most and least preferred co-workers. However, data collected in the military studies suggested different conclusions. In some cases, greater effectiveness was correlated with more distance, in others, with less distance. An important conditioning variable used to explain the different findings was the sociometric endorsement of the "keyman" by the commanding officer. The keyman was operationally defined as the group member who most directly influenced the success of a military mission. For example, the keymen who served in this capacity in a bomber crew were the radar observer and the navigator. When there was endorsement of the keymen, psychological distance was found to be positively related to effectiveness; when there was not, there was either no relationship or it was negative. The interpretation and implication for these findings will be discussed later in the paper when the contingency model is explained. The point to be made now is that as a result of the findings in the military groups, the importance of the leader-group member relationship was firmly established. Leadership effectiveness seemed to be related to the relationship existing between the leader and his group members. Therefore, the dimension of leader-member relations was given closer attention. In addition, two other dimensions--the structure of the task, and the power of the leader--proved to be relevant variables to consider when investigating leader effectiveness. These three dimensions, all included under the general concept, "favorableness of the situation for the leader," have become the foundation of Fiedler's model of leadership.

Leader-Member Relations

Of the three dimensions named above, that of leader-member relations is seen as most important. Whereas task structure and the position power of the leader are group attributes determined by the organization to which the group belongs (Fiedler, 1968), the interpersonal relationship which the leader establishes with his group members is at least in part dependent upon the leader's personality (Fiedler, 1968). The situation which is most favorable for leadership would have good relations between the leader and the group.

In his research Fiedler measured the "goodness" of leader-member relations in two ways. In his early studies he used sociometric endorsement of the leader by the group members as an indication of good relations. Non-endorsement was interpreted to mean that "moderately poor" relations existed.

In later studies (Fiedler, 1968), a measure of "group atmosphere" (GA) was also used to measure the same dimension. The GA is a scale containing items quite similar to the scale used to obtain LPC measures. The leader is asked to rate the group on items such as friendly-unfriendly, tense-relaxed, etc. A summation of the item scores is used as an indicator of the degree to which the leader feels accepted by the group and at ease in his role.

Fiedler (1968) points out that there are some cases where the sociometric approach is preferred and other times when assessing the GA is more appropriate (see procedure).

The four dimensions listed above indicate the extent to which the leader is able to control and influence his group members because of the fact that the task is structured or capable of being programmed (Fiedler, 1967). The implications for the task structure dimension will be discussed further when findings based on Fiedler's contingency model are discussed.

Task Structure

In terms of relevance, the dimension of task structure ranks second in Fiedler's theory. The task structure dimension is defined operationally by Fiedler by the use of four scales developed by Shaw (1962). The four scales are:

Decision verifiability--the degree to which the correctness of the solution of decision can be demonstrated either by appeal to authority (e.g., the census of 1960), by logical procedures (e.g., mathematical proof), or by feedback (e.g., examination of consequences of decision, as in action tasks).

Goal clarity--the degree to which the requirements of the task are clearly stated or known to the group members.

Goal path multiplicity--the degree to which the task can be solved by a variety of procedures (number of different methods to reach the goal, number of alternative solutions, number of different ways the task can be completed).

Solution specificity--the degree to which there is more than one correct solution. (Some tasks, such as arithmetic problems, have only one correct solution; others have two or more, e.g., a sorting task where items could be sorted in several different ways; still others have an almost infinite number of possible solutions, e.g., human relations problems or matters of opinion.)

Power Position

Third in importance among the three dimensions is that of the leader's position power as perceived by the group members. Fiedler assumes that the leader's power is inversely related to the power of his members (Fiedler, 1968). This dimension is measured by an 18-item checklist containing various indices of position power (see Appendix B). All but three items are assigned a value of +1. Items 16, 17, and 18 are weighted +5, +3, and -5 points respectively. More will be said about this concept below.

The Contingency Model

Recent publications by Fiedler (1960, 1964, 1966) have centered about the importance of the relevant factors which have been found to significantly influence leadership effectiveness. As a result of his findings over the years, Fiedler (1964) conceptualized a "contingency model" of leadership effectiveness. The highlights of this model will now be presented.

Interacting Versus Co-acting Groups

Fiedler's discussion of groups is limited to interacting rather than co-acting groups. By an interacting group is meant "a face-to-face team situation, as a basketball team or a tank crew in which the members work interdependently toward a common goal" (Fiedler, 1968, p. 368). In this kind of group the individual's contribution influences the performance of the other group members, and, according to Fiedler, it cannot be separated from total group performance. By contrast, in a co-acting group, such as a bowling team or a rifle team, the group's performance is usually determined by summing the members' individual performances.

The leader is "the group member officially appointed or elected to direct and coordinate group action" (Fiedler, 1968, p. 369). In groups that have no officially designated leader, Fiedler and his associates have identified the group's informal leader by means of sociometric questions that ask members to name whom they consider the most influential leader, or whom they would most like to have as leader in a similar task.

Fiedler defines the leader's effectiveness in terms of the group's performance of the primary task. For example a manager's job may be concerned with maintaining his company's public relations, selecting good workers, preserving good employee morale, etc. Although each of these is important, he is likely to be ultimately evaluated in terms of how much profit he or his department makes for his company (assuming that this can be measured). In other words, profit would be considered the primary criterion, not high morale and low turnover, both of which may significantly contribute to performance. Adequate criteria of performance have been a very important part of Fiedler's research.

Categorization of Group-Task Situations

Fiedler defines leadership in terms of wielding power and influence. When he says that different types of groups require different types of leadership, he implies that the leader has to use different means to influence his group members. He points out too that it is easier to wield influence and power in some situations than others. For example, a military group is more easily influenced by a general than by an army private. Similarly, a group will be influenced more easily by a person who is liked and trusted than by someone who is disliked and rejected by the group.

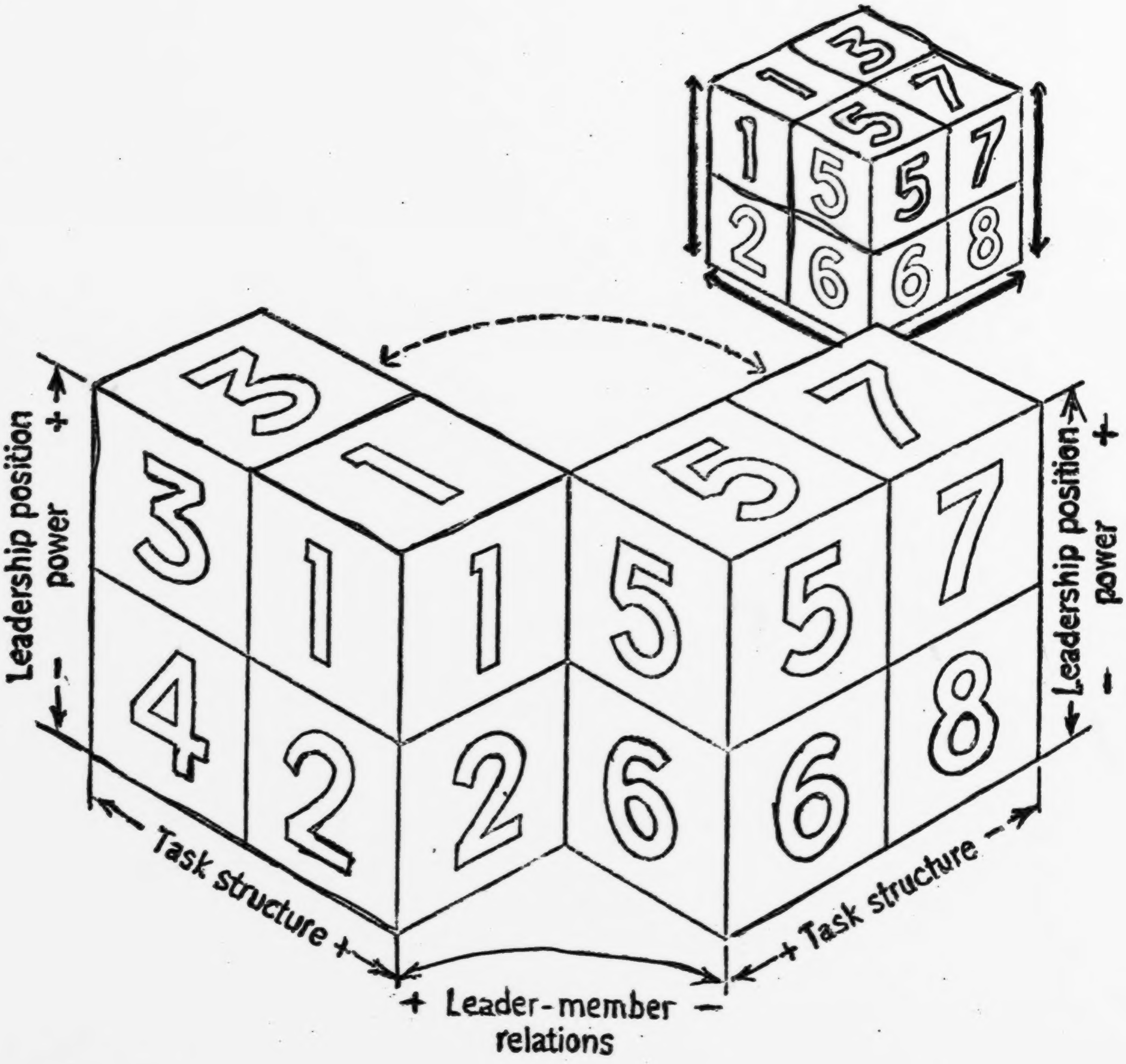
Fiedler, as a result of his past research endeavors, has specified three important aspects of the situation that influence the leader's role. These are the leader-member relations, task structure, and position power. All of these were discussed at length earlier in the paper.

A Three-dimensional Group Classification

Once measures of the three dimensions listed above are available, it is possible to order group-task situations along the favorableness continuum, by first ordering the group-task situation on the basis of the leader's relation with his group, next on the basis of task structure, and lastly on the basis of position power. This ordering may be considered to be an operational definition of the favorability continuum. Having been rated on each of the three dimensions, each group may be located in a three dimensional space. By dividing each dimension into a high and a low half one obtains an eight-celled cube (Figure 1). The correlations between leader attitudes (as measured by ASo or LPC) and group performance, may now be studied concerning their correlational similarities or differences within each of the

Figure 1. A model for the classification of group task situations.

Source: Fiedler, 1968, p. 370.


1 3 7 5
1 5 5 7
2 6 6 8
3 1 5 7
3 1 1 5 5 7
4 2 2 6 6 8
Leadership position power + −
Leadership position power + −
Task structure +
+ Task structure
+ Leader-member relations −

eight cells or in regard to their octants' magnitude and direction. If the correlations are similar, it may be inferred that group classification has been successful since the classification shows that groups falling within the same cell require a similar leadership style (Fiedler, 1968).

In support of his theory, Fiedler re-examined the findings of several studies of leadership that included 59 group-task situations which were assigned to the various octants. Table 2 shows that sets of groups falling within the same octant have similar correlations between the leader's LPC or ASo score and group performance. Thus the classification suggested by Fiedler seems to be meaningful.

Ordering the group-task situations on the basis of how favorable they are for the leader's exercise of power and influence, Fiedler concludes that a liked and trusted leader possessing strong position power and overseeing a structured task is in a more favorable position to influence his group through an unstructured task. Fiedler states that the intermediate steps pose certain theoretical and methodological problems. "Ordering a three-dimensional system into a unidimensional one implies a partial order or a lexicographic system for which there is no unique solution" (Fiedler, 1968, pp. 370-71).

Figure 2 is a graphic representation of Fiedler's classification. In this figure the numerous correlations between LPC (or ASo) and group performance from each of Fiedler's studies are plotted against the favorableness of the situation for the leader. When a line is drawn connecting the median correlations in each condition of favorableness, the results reveal an inverted U-shaped curve as appears in Figure 2.

The figure shows that at each extreme end of the favorableness for

Table 2. Median Correlations Between Leader LPC and Group Performance in Various Octants

Octant	Leader-Member Relations	Task Structure	Position Power	Median Correlation	Number of Relations included in Median
I	Good	Structured	Strong	-.52	8
II	Good	Structured	Weak	-.58	3
III	Good	Unstructured	Strong	-.41	10
IV	Good	Unstructured	Weak	.47	10
V	Moderately poor	Structured	Strong	.42	6
VI	Moderately poor	Structured	Weak		0
VII	Moderately poor	Unstructured	Strong	.05	10
VIII	Moderately poor	Unstructured	Weak	-.43	12
V-A	Very poor	Structured	Strong	-.67	1

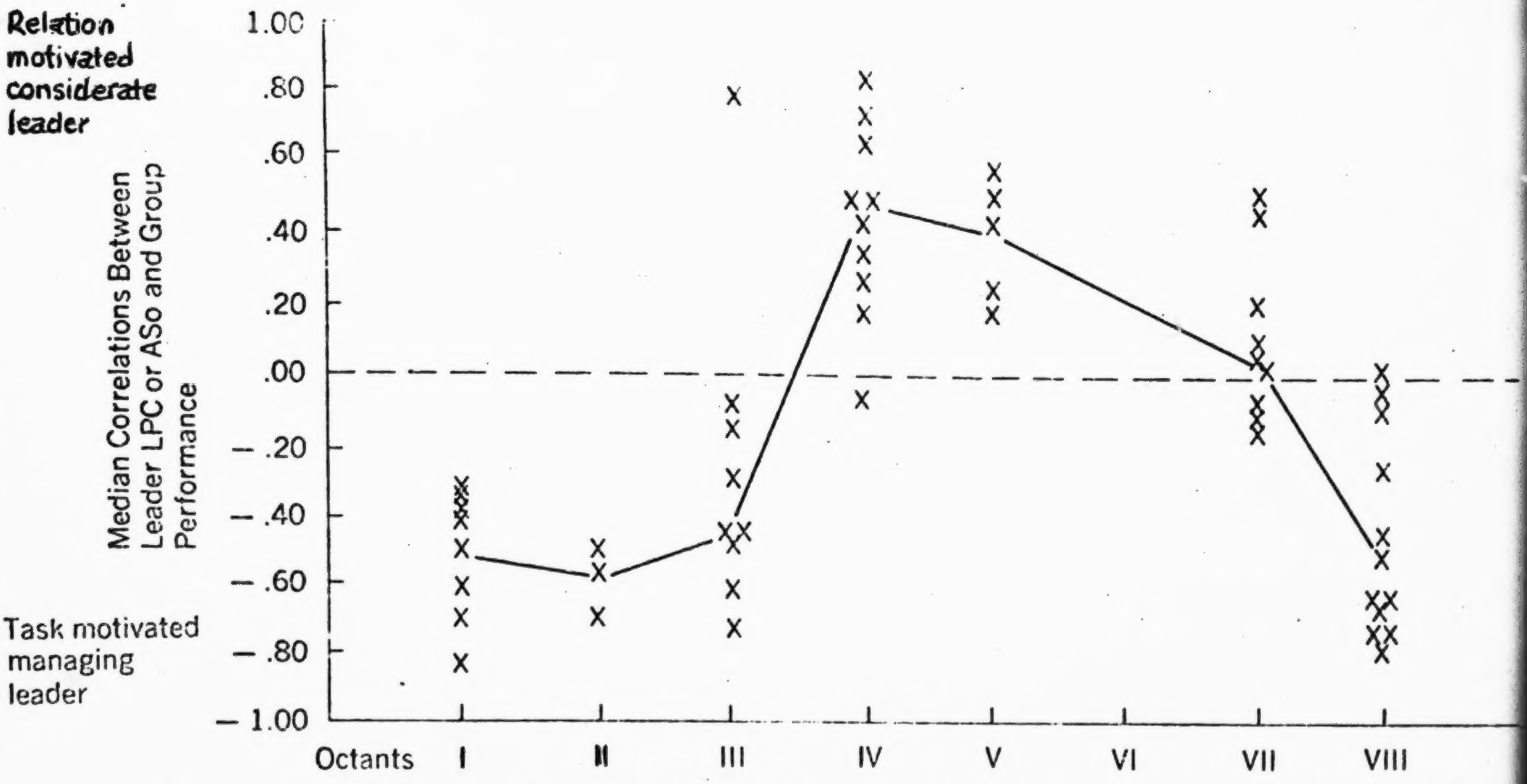
leadership dimension there is a negative relationship between LPC and group performance. This means that leaders with low LPC scores (task-oriented leaders) were more effective under very unfavorable or very favorable conditions. Leaders with high LPC scores (relation-oriented leaders) were more effective in the middle range of the favorableness continuum. In other words, high LPC leaders are more effective when the situation has some favorable and some unfavorable factors for leadership.

Fit With Everyday Experience

Fiedler (1967b, 1968) suggests that the above findings fit rather well with one's daily experience.

> When the group backs the leader and the task is straightforward, the leader is expected to give clear directions and orders. The leader who under these conditions acts

Figure 2. Correlation between LPC scores and group effectiveness plotted for each cell.
Source: Fiedler, 1968, p. 371.



Leader-Member Relations	Good	Good	Good	Good	Poor	Poor	Poor	Poor
Task Structure	Structured		Unstructured		Structured		Unstructured	
Leader Position Power	Strong	Weak	Strong	Weak	Strong	Weak	Strong	Weak

> in a passive, nondirective manner will tend to lose the esteem of his group. We do not want the pilot of an airliner to strive for consensus on landing procedures while he is making his final approach. Similarly when the task is confused, when the leader has little power, and when he is disliked, he would be better off paying attention to the task than waiting until he can get better interpersonal relations with the group. This is reflected in the old army advice that the leader in an emergency is better off giving wrong orders than no orders.
>
> The considerate, human relations oriented approach seems most appropriate when the liked leader deals with a group engaged in a highly unstructured task such as a committee engaged in creative work or in decision-making and problem-solving tasks. Here the liked leader must be considerate of the feelings and opinions of his members; he must be permissive and non-threatening. The task-oriented low LPC leader is likely to be too impatient to get on with the work and perhaps too intolerant of side comments and off-beat suggestions.[5]

Comments on the Fitting of Fiedler's Data Onto the Contingency Model

The arrangement of the data presented in Figure 2 was created after most of the studies providing the data were conducted. Fiedler also supplied additional data not included in Figure 2 and which are not of the ex post facto type in support of his model. One of these studies (Fiedler, 1966) involved Belgian sailors. Support was found for his model in that study which involved Flemish and French-speaking petty officers. Thus there is support for Fiedler's model in a different culture from our own.

One of the most interesting and desirable features of the model is that it seems to work so well. After years of research findings, Fiedler has continued to cope with the contradictory nature of his own findings and has developed a scheme to deal directly with the importance of the group-task situation. His dimensions are relevant and important ones. Moreover, he has shown in a systematic fashion that they are related to diverse criteria of group performance.

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[5] Fiedler, 1968, p. 372-73.

From the above discussion one might conclude that Fiedler has answered the question of what makes for effective leadership. However, closer reading of his work reveals that this is not the case. It is true that the model is a definite contribution to the theory of leadership effectiveness, but it is also true that the empirical support for it comes almost exclusively from Fiedler's own research, and therein lies one of its weaknesses.

Butterfield (1967) has pointed out some of the flaws in the theory.

> Fiedler's data suffer from very small N's and, perhaps consequently, an almost total disregard for tests of statistical significance. Fiedler presents 72 correlation coefficients from his original data to support the model. Of these only 15 are significant at the .05 level of confidence, including one in the wrong direction. Although a fair number of the rho's approach a respectable size, including a few in the .70's, there is also a fair number in the .20's and below. Many of the correlations come from sets of groups with N's less than 10. In the empirical test specifically designed (in part) to test the new model, there were 48 correlations, only six of which were statistically significant. When over 80 percent of the correlations offered in support of a new model are not significantly different from zero, then it would seem clear that such support for the model must be considered suggestive--at best.[6]

The present study involves an attempt to reduce the ambiguity which exists in the contingency model.

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[6] Butterfield, 1967, p. 53.

Problem

Psychological Distance

From the beginning of Fiedler's investigation there has been considerable concern regarding what he calls psychological distance. Several different interpretations can be suggested. It is the main purpose of this study to test one of these interpretations.

Regardless of the interpretation offered it is clear that the distance measure is a measure of the leader's effect or feeling toward particular co-workers in the given work situation rather than a measure of other kinds of overt *behavior* in the situation. Instructions for the ASo or LPC form do not require the leader to describe a worker from his present group. Rather he describes *any* co-worker with whom he has worked in *any* situation. Whether the particular worker the leader selects comes from his present group is irrelevant for Fiedler. Whether the way the leader describes the worker corresponds in a particular way in his leadership *behavior* in the group with whom he interacts is a question to which Fiedler has not addressed himself. It is extremely likely that there is some relationship, but adequate empirical support of such a relationship remains to be demonstrated. This study was an attempt to discover the nature of such a relationship, assuming that one exists. Lack of these kinds of data presents a real problem in the interpretation of Fiedler's conclusions, thus the need for this kind of study.

The interpretation of the similarity measure (ASo and LPC scores) as a measure of distance is spelled out in a number of Fiedler's papers (Fiedler, 1960, 1963, 1967a, 1967b, 1968). Leaders who obtain low similarity scores when rating their most preferred and least preferred co-workers are seen as implicitly rejecting their least preferred co-workers, and "in general to be psychologically more distant from others" (Fiedler, 1960, p. 591). This type of leader is, according to Fiedler (1967), more aloof, more reserved, not warm nor accepting. It should be noted that the generalization is based on the relationship between the leader and his least preferred co-worker. No comments are made about how the leader interacts with his most preferred co-worker. More important, and most relevant to this study, is the fact that Fiedler has not systematically obtained data concerned with how the distant or close leader behaves as a leader.

Butterfield (1967) offers another possible interpretation. Rather than representing a reserved, aloof, and psychologically distant leader, he suggests that the distance can be taken to mean simply a leader who recognizes differences between people. He further points out that presumably this ability to discriminate is accompanied by a corresponding ability to behave toward others in a manner consonant with the perceived differences between them. This interpretation is appealing in that it takes into account intrapersonal individual differences. In other words, the leader may well behave differently towards different people in his group.

The above discrimination interpretation advocates that Fiedler's distant leaders may or may not actually behave in a distant manner. Such a leader, according to this interpretation, is probably "distant" with some group members and "close" with others. Butterfield (1967) states that

> What matters is that the leader's perception of the world around him, i.e., of his associates, is sharper. And, having perceived differences between people, he is thus able to behave toward them differently. Such differential

treatment results in more effective performance.[7]

The "discrimination hypothesis" demands behavioral data in order to test its validity. Evidence must be gathered that not only describes the leader's behavior but shows that it is systematically different toward different people.

From the above consideration it may be concluded that the systematic collection of behavioral data, concomitant with measurement of psychological distance, is an obvious and necessary step toward a better understanding of Fiedler's work.

Leader-Member Relations

Related to the dimension of psychological distance is the concept of the relationship which exists between a leader and his group members. Do leaders who are perceived differently (as measured by sociometric questionnaire) by their group members behave differently in their group situations? A second purpose of this study was to investigate this question.

Task Structure

A third variable of interest and its relation to the leader's behavior and to group performance is that of task structure. Do leaders of a given leadership style behave differently depending upon the type of task or problem one's group is working on? This study also sought an answer to this question.

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[7] Butterfield, 1967, p. 42.

Experimental Manipulations (Independent Variables)

Brief mention of the experimental manipulations is made here in order to state the hypotheses of the study. Each variable manipulated is more fully spelled out in the Procedure section.

Leadership Style

Two types of leadership style--task-oriented and relation-oriented--were experimentally manipulated by the investigator.

Leader-Member Relations

Two levels of leader-member relations, as measured by a sociometric questionnaire, was a second independent variable employed in the study.

Task Structure

A third relevant dimension of Fiedler's model concerns the nature of the group task in terms of its clarity or ambiguity. Two levels of tasks, structured and unstructured, were used in the study.

Dependent Variables

Behavior of the Leaders

The main dependent variable employed in the study involved the categorizing of all verbal statements and certain kinds of nonverbal behavior participated in by the group leaders. An adaptation of Bales's (1950) system for categorizing face-to-face interactions developed by Borgatta and Crowther (1965) was used for this purpose (see Procedure).

Measure of Leader-Member Relations

Two measures of leader-member relations were obtained. A sociometric questionnaire (Appendix C) in conjunction with a measure of group cohesiveness (as defined by Seashore 1954) (Appendix D) was used to operationally define and measure this dimension.

Measure of Task Structure

The extent to which a given problem used in the study was structured or unstructured was measured by obtaining faculty ratings on four dimensions devised by Shaw (1962). These scales were discussed at length earlier in the paper.

Criterion of Group Effectiveness

Ratings of problem solutions obtained independently from three supervisor faculty members were used as the criterion of group effectiveness.

Hypotheses

As measured by a sociometric questionnaire (Appendix C) and the group cohesiveness index (Appendix D), the leader-members relations were found to be "good" according to Fiedler's definition. Power for all groups ranged from 8 to 11. This range of scores is within the limits of "strong" power position as defined by Fiedler.

In line with Fiedler's contingency model, and in accord with the behavioral aspects of the leaders' group interactions, the following hypotheses were tested:

a. It was hypothesized that significant differences will be found between the groups having high LPC leaders and low LPC leaders. For the highly unstructured tasks high LPC led groups should be more effective, and for highly structured tasks the low LPC led groups should perform more effectively.

b. Since a high score on LPC indicates a relationship orientation--a person who is relatively supportive, nondirective, passive--the observed behaviors of the leaders as represented in Borgatta and Crowther's (1965) group process analysis should correlate positively with the dimensions attributed to that style by Fiedler. These behaviors would include those represented by categories 1, 2, 3, 4, 5, 8, 9, 11, 12, and 13 (see Appendix E for an explanation of the categories). The behaviors of low LPC leaders are expected to correlate positively with task-oriented types of behavioral categories as described by Borgatta and Crowther (1965). These behaviors would include those represented by categories 6, 7, 10, 14, 15, 16, 17, and 18.

c. In line with the "discrimination hypothesis," as discussed by Butterfield (1967), it was hypothesized that an individual leader would behave differently towards different members of his group. More specifically, a qualitative difference in the types of verbal statements made by leaders and their group members was hypothesized, as well as a quantitative difference; i.e. leaders are expected to interact more with some individuals in their groups than with others.

d. In line with the "discrimination hypothesis" it was further hypothesized that some leaders would talk more to their group members than others, and that the trend in talking in a given one-hour time period would differ among leaders; i.e. some leaders would talk more at the beginning of the problem-solving session than other leaders.

METHOD

Setting

The study was conducted at St. Mary's Hospital, Rochester, Minnesota. There are three student nursing programs at St. Mary's. One of these is a four-year collegiate program, and it was the sophomore students from this program who participated in the study. These students, after completing one and one-half years of formal course work at a nearby liberal arts college, go to the hospital for the second semester of their sophomore year and for their entire junior year. During that time the students work and live together and get to know one another quite well. The study was conducted two months after they arrived at the hospital.

Subjects

The sophomore class has a total of 86 female students averaging 18 years of age. The mean I.Q. of the class is 118, based on the Otis Quick-Scoring Mental Ability Test (30 minute norms). From observing the students it becomes quite apparent that as a group they are bright, highly motivated, and hard-working. Excellent cooperation was obtained from them throughout the study.

Procedure

In the fall of 1967 the sophomore class was asked to participate in a study which would be concerned with "group cynamics." The students were told that the writer wished to collect data which hopefully could be used to aid the faculty in implementing possible changes in some of the educational experiences used in the nursing program. The students were assured that all responses made by them as individuals on the measures used during the study would be confidential and would be seen only by the experimenter. Only group results would be shown to the faculty.

Two sets of measures, Least Preferred Co-worker scores and sociometric ratings, were employed to obtain scores which were used to identify leaders who were later assigned to groups as part of the experimental design.

LPC Scores (Leadership Style)

The LPC scale administered to the participants of the study is shown in Appendix A. With 20 bipolar adjectives, one's total LPC score may range from 20 to 120, since a value of 6 points is assigned to the favorable end of the scale and a value of 1 point is assigned to the unfavorable end of the continuum.

Based on the obtained scores, 14 leaders were chosen and assigned to one of 14 groups. Individuals obtaining scores from 94 to 70 were operationally defined as high LPC leaders, while those with scores ranging from 65 to 27 were defined as low LPC leaders. Thus, two levels of LPC comprised one of the independent variables used in the study.

Sociometric Ratings

According to Fiedler's thinking much of a group's performance depends upon the personal relationship which exists between a leader and his group members. There are numerous ways in which one can assess whether leader-member relationships are good or poor. In his research Fiedler has used two methods--sociometric preference ratings, and ratings of the group's atmosphere as perceived by the leader. Fiedler (1967b) contends that the sociometric method is preferred in real-life groups whose members live and work together for a relatively long period of time. On the other hand, he thinks that the sociometric method is not very sensitive in ad hoc groups which extend over a short period of time. Since the subjects involved in this study had already known each other for over a year, and their group participation would last for approximately two months, it was decided to use sociometric ratings in order to measure the leader-member relationships. Appendix C illustrates the seven questions asked of each student in order to obtain sociometric scores for each individual. The seven questions were intercorrelated and the resulting correlations suggested two clusters of questions--those pertaining to a leadership ability type of sociometric status (questions 1 and 5) and those involving a more socially oriented type of status (questions 3, 4, 6, and 7). Since the study was primarily involved with manipulating leadership style, it was decided to use the leadership oriented questions as a measure of each student's sociometric status in the group.

For each question every student was asked to list three choices from within her peer group. A value of three points was assigned to the first choice, two points to the second, and one point for the third choice. Question number 2, which asked for the names of students least preferred as leaders, was scored in the same fashion, but interpreted differently. A student's first choice represented the peer least acceptable as leader to the ratee. A total score for each question was found by summing across the ratings of all the raters for a given ratees. Total sociometric scores assigned to the students ranged from 89 to 0. These scores were split into high, medium, and low sociometric status levels, and leaders were chosen from the high and medium levels. It was decided to pick leaders from among the high and medium sociometric groups since there were relatively few groups (14) and the possibility of a leader losing her leadership position as a result of not being accepted by her group was hopefully minimized in this manner. The leader-group member relations, then, as measured by sociometric status, was the second variable manipulated in the study.

It should be pointed out that the three sociometric choices made by a particular student were limited to half of her student-nursing class. The program's schedule was such that half the students were committed to working in certain medical areas of the hospital and the remaining half were assigned elsewhere. Seven groups of students, then, came from one half the class and seven from the other half. For each sociometric question a student was free to pick any three peers who were in her half of the class. Leaders were ultimately chosen from the half of the class in which they were members.

Although the average group size consisted of five members plus a leader, the leader-member relationship measure was actually based on an entire half of the class (43 students). Realistically speaking, it is possible that a leader for a given group may have received all or part of her sociometric choices from peers outside her respective problem-solving group consisting of from five to eight people. Therefore, a questionnaire, based on a measure of cohesiveness as operationally defined by Seashore (1954), was administered to each group member and group leader after all the groups had completed their first problem-solving session. Appendix D illustrates the questions used to evaluate the extent to which group members accepted their assigned leader. Table 3 shows the results of the questionnaire for each of the five questions. Based on these results it was

Table 3. Mean Group Responses on Group Cohesiveness Measure

Number of Points Assigned	Response Categories	Mean Group Response Score (based on summing across all groups)
Question 1		
3	Really a part of my discussion group	2.5 (on the average, students feel they are a real part of group)
2	Included in most ways	
1	Included in some ways, not in others	
0	Not ascertained	
Question 2		
1	Would want very much to move	3.1 (on the average, people are indifferent as to whether they stay or move)
2	Would rather move than stay	
3	Would make no difference to me	
4	Would rather stay than move	
5	Would want very much to stay	
0	Not ascertained	
Question 3		
5	Anticipate being able to work effectively with her all the time	4.2 (on the average, group members anticipated being able to work effectively with leader most of the time)
4	Anticipate being able to work effectively with her most of the time	
3	Anticipate being able to work effectively with her 50% of the time	
Question 4		
1	Group feels leader won't influence group	
2	Group feels leader will have some influence	

Table 3. (Continued)

Number of Points Assigned	Response Categories	Mean Group Response Score (based on summing across all groups)
Question 4 (continued)		
3	Group feels leader will be effective 50% of the time	4.1 (on the average, group members thought leader would be effective most of the time)
4	Group feels leader will be effective most of the time	
5	Group feels leader will be effective all of the time	
Question 5a		
3	Students get along better than most	2.1 (on the average, students thought their group members "got along well enough"
2	About the same as most	
1	Not as good as most	
0	Not ascertained	
Question 5b		
3	Students stick together better than most	2.1 (on the average, group members thought their groups stuck together about the same as other groups)
2	About the same as most	
1	Not as good as most	
0	Not ascertained	
Question 5c		
3	Students help each other in their group more than most	2.2 (on the average, students thought their group members helped each other out about the same as other group members in other groups)
2	About the same as most	
1	Not as good as most	
0	Not ascertained	

concluded that the group members without exception were quite satisfied in their respective groups. Therefore, the groups as originally formed were left intact. This means that 14 individuals, after having been selected as leaders based on LPC and sociometric scores, were randomly assigned to one of 14 groups, and the remaining 72 students were then randomly assigned to the groups.

Having considered the leadership variables which were manipulated in the study, a few moments will be spent discussing related variables which were controlled for, namely, those of the leader's power and his intelligence.

As discussed in the Introduction, the leader's power has been found to significantly influence leader effectiveness (Fiedler, 1968). For this study it was decided to try to control the amount of power assigned to the leadership role. It will be recalled that the leaders were picked from among the students' peers. Before the experiment began, the leaders did not enjoy special or official rank and status in real life which would have set them apart from or above their group members. In order to create the official status as leader, each leader was assigned a special rank by the faculty as a result of the pretest data. This simulated rank, according to Fiedler, must be clearly superior to the members' rank and must not be just that of "chairman" or "group leader" of the group during its work period (Fiedler, 1968). In order to establish leadership status each leader was given certain functions and responsibilities:

a. After each problem-solving session the leader assigned a letter grade, ranging from "A" to "F," to each of her group members (Appendix F). The grade represented the extent to which the respective member cooperated with the group in a contributive fashion in reaching the solution to a given problem. Grades from the ten sessions were converted to points and these in turn represented twenty percent of the student's grade for a related course.

b. The leader was appointed as the "keyman" for her group. Earlier in the paper the role of the keyman in the military studies was discussed. In those studies, the keyman was someone other than the group leader. In the present study, however, the leader's function included those of the keyman. This meant that she was responsible for getting the problem solution written up, typed, and submitted to the faculty for grading. In addition it was the leader's responsibility to schedule each group meeting and to coordinate related matters with her group members.

Since each of the above functions was considered quite important for establishing power for the leader, it was decided to give each leader identical functions.

Fiedler (1968) has suggested an 18-item checklist which contains various indices of position power (see Appendix B). The sum of the checked items provides a highly reliable scale for measuring leader position power. Fiedler (1967b) states that the average correlation indicating the interrater agreement among four judges rating 35 tasks was .95. This measure was given to each group member. The perceived leader position power for the 14 leaders ranged between 9 and 12. This range lies within the values which operationally define the power position as high. Based on this finding it may be concluded that each leader was perceived as possessing a high and relatively equal degree of power. This finding had implications for the hypotheses stated earlier.

A second variable controlled was that of intelligence. Fiedler and Meuwese (1963) found that a leader's intelligence and ability scores in four different studies correlated highly with group performance when the internal group environment was relatively pleasant and free from stress; that is, when the leader was accepted by his group and/or when the group was cohesive. Since both of these conditions existed for all 14 groups involved in the study (see Table 3), intelligence, as defined by the Otis Quick-Scoring Mental Ability Test (30 minute norms), was controlled for in this study. The mean intelligence quotient for the leaders was 125 (standard deviation = 3.5 points).

Table 4. Assignment of Groups to Treatments

		LPC (leadership style)	
		High	Low
Sociometric	high	4 groups	4 groups
Status of Leader	medium	3 groups	3 groups

Task Structure

A third variable manipulated in the study involved the structure of the tasks or problems which were solved by the students during their group sessions. All of the problems were designed in such a way as to contribute to their regular educational program. That part of the program will now be explained.

The students participate in clinical experiences involving patient care three days per week. A typical day involves conferences before and after they care for their patients. These conferences are conducted by the nursing faculty instructors. During these conferences the topics discussed resolve around worksheets similar to the kind found in Appendix G. As mentioned above, the groups participated in problem-solving behavior. The worksheets provided the framework from which problems were composed.

Both structured as well as unstructured problems were used for the problem-solving sessions. One structured and one unstructured problem was designed for each of five topics related to the students' educational and clinical experiences. The topics were: body image, masculinity-femininity, venereal disease, body burns, and fatal prognosis. The problems for each topic are illustrated in Appendix H.

The degree to which any given problem was defined as structured or unstructured was determined by the same criteria used by Fiedler in his research. These criteria consist of the four scales developed by Shaw (1962) discussed in the Introduction.

Three faculty members independently rated each of the ten problems on the four scales listed and discussed earlier. The average of the intercorrelations of the three faculty raters was .96, based on an intraclass correlation as described by Guilford (1965). If the intercorrelations of these raters may be taken as an indication of reliability of ratings, one can say that the typical reliability of a single rater's ratings is in the order of .96.

Observer Participation

As stated earlier in the paper, the main dependent variable employed in the study involved the categorizing of all verbal statements made by the leaders to the individuals comprising their respective groups. An adaptation of Bales's (1950) system for categorizing face-to-face interactions developed by Borgatta and Crowther (1965) was used for this purpose.

Students in their junior year served as group observers and classified the leaders' verbal statements. This aspect of the study will now be discussed.

As part of her nursing education, each student, during her junior year, is required to research some problem that is related to her program of studies. The writer, with the faculty's unanimous approval, approached the juniors to solicit volunteers whose involvement in the study would replace their project requirement. Thirty-one students agreed to participate.

An intensive 30-hour training program was conducted by the writer to teach the observers how to use the 18 scales which appear in Appendix E. A 19th category was added in order to handle remarks referring to need for clarification of an idea or statement. Several media, including television dialogues, narratives from plays and novels, and live group discussions among the observers, were used to provide stimulus material which the students categorized. Working in pairs, they worked toward reaching a criterion of 70 percent agreement between them for three sessions involving diverse verbal statements, each session lasting approximately five minutes. When this criterion was approximately reached, the sophomores were scheduled to meet to solve the ten problems discussed earlier. The degree to which the observers agreed in their categorizing of behavior is discussed later (see analysis and results section).

Problem-solving Sessions

Ten problem-solving sessions were conducted over a period of six weeks.

To control for possible order effects the problems were presented in the following sequence (A = unstructured problem; B = structured problem): A B B A A B B A A B.

Several days prior to a session all group members were given a bibliography of readings from which the problem for each session was devised. Each group met at a time most convenient for them on a given day.

Each problem-solving session lasted 50 minutes. During that time the group members had to decide upon a workable solution and write out that solution. The written solution was then typed verbatim by one of the group members and then submitted to three faculty judges for rating.

Two junior observers were present during each problem-solving session. A given observer did not observe with another observer more than once, with the exception of three pairs who observed together on two occasions.

A number from 1 to 8 (depending upon the size of the group) was assigned to each group member. This number was worn by the student throughout the duration of the ten sessions. A group leader always wore the number 1. The procedure followed during the sessions was left up to the group leaders. They had complete autonomy in this regard.

Categorization of Verbal Behavior

Two observers were present at each session and independently recorded as many verbal statements as they possibly could observe and categorize. Each observer had a set of sheets in front of her on which were listed the specific categories (Appendix I). She knew the theoretical meanings of the categories and the range of variations of concrete behavior included in each of the 19 categories. As the group members talked to each other she broke their behavior down into the smallest meaningful units she could distinguish, and recorded the scores by putting down beside the proper category the number of the person speaking and the number of the person spoken to. For example, if the leader (number 1) began, "I think we should approach the problem this way, Betty," (number 5) the observer wrote down the symbols "1 - 5" (i.e., Person 1 to Person 5) just opposite Category 6 ("Gives a procedural suggestion") on the data sheet. The data sheets were divided into 29 columns. A single interaction was recorded in each column. In this way they were kept in correct sequence across time. During the 50-minute observational period, a timer, audible only to the observers, sounded every five minutes. From these ten intervals the observers randomly selected three and estimated their reliability as a pair (see analysis and results).

Faculty Ratings

After each group completed a problem, three faculty members independently rated each group's solution to the problem just completed.

One criterion, namely the extent to which a solution was practical, as evidenced by the readings and the faculty's judgment, was used to judge all of the structured problems. A structured problem, as defined above by Shaw (1962), demands that the correctness of the solution be demonstrated by appeal to some authority. In this case, the "authority" was the written text.

Two criteria were used in judging solutions to all of the unstructured problems. One of these was referred to as the extent to which a solution was original; the other was its practicality, i.e., the feasibility of its being implemented in real life (see analysis and results for discussion of the criteria's effectiveness).

Certainty ratings for each criterion were made by each faculty member for a given solution. Wolins (1964) has found evidence that greater reliability and item validity can be obtained by measuring a person's responses on a certainty continuum (a response may range from 1 to 99) than by having him assign dichotomous values to stimuli. For example, in some other procedures of obtaining ratings the rater is asked to assign "yes" or "no" or other dichotomized responses to stimuli concerning some ratee. The certainty method can provide a correction for how much the rater knows about the validity of the solution. This correction is reflected in the rating assigned. If the rater is quite certain that a solution is a correct and valid one, then he should be more certain about his ratings. For example, a particular rater would not only have reflected in his ratings the fact that he judges one solution better than another but also how certain he is that his judgment is correct. The certainty method also provides a greater range of responses for the person using it (Wolins, 1964).

The instructions for using the certainty method appear in Appendix J. Results of the faculty ratings will be discussed later.

Intergroup Competition

There are several studies related to Fiedler's model that conclude that competition among small face-to-face groups contributes to the individual group member's adjustment and morale (Myers, 1962; Hutchins and Fiedler, 1960; Julian, Bishop, and Fiedler, 1966). Based on these studies Fiedler (1967a) concludes that

> Our studies suggest that competition is beneficial to morale and adjustment by wielding groups into more cohesive units in which men see each other as interdependent and in a positive manner. In contrast, competition among men as

> individuals belonging to the same group is likely to divide the group and to engender resentment.[8]

Deutsch (1953) reported comparable findings. His research showed that groups of competing individuals, as contrasted with groups of cooperating ones, demonstrated less coordination, less pressure for achievement, and a poorer evaluation by the members of the group.

To encourage between-group competition, a steak dinner was awarded to the highest ranking group.

Missing Data

Out of the 140 problem-solving sessions (10 sessions for each of the 14 groups) which were held during the study, group number three missed one session, and group number four missed three sessions. Since several of the analyses employed did not lend themselves to accommodate missing data it was decided to use the means of adjacent problem-solving sessions in order to fill in the missing information.

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[8] Fiedler, 1967a, p. 43.

RESULTS AND DISCUSSION

The results will be discussed in the order in which different measures were incorporated into the study.

LPC Scores

Two sets of LPC scores were obtained. The first measure was taken in September, 1967; the second in February, 1968. These two sets of scores correlated positively and to a significant degree ($rho = .70$, $N = 14$, $p < .01$). The LPC scores obtained in February were obtained just four weeks before the problem-solving sessions began and were used in assigning leaders.

Sociometric Ratings

Sociometric ratings were obtained approximately one month before the actual experiment was conducted. It was decided that some estimate of the reliability of this measure would permit the writer to interpret the effects of the two levels of leader-group member relations (based on sociometric status) in a more meaningful manner.

Since only one administration of the sociometric questionnaire was given, no test-retest reliability estimate was available. Therefore, it was decided to randomly split the raters into two groups, and to compare the sociometrically chosen ratees' scores assigned by one group of raters with the scores assigned by the raters in the second group. This procedure enables one to estimate interrater reliability. The resulting correlation was significant beyond the .01 level ($r = .56$, $N = 22$). Thus the sociometric questionnaire proved to be a fairly reliable measure.

Group Cohesiveness Measure

A measure of group cohesiveness (Appendix D) as operationally defined by Seashore (1954) was administered after the first problem-solving session was completed and again at the end of the study. Scoring was accomplished by assigning points to each response category for each question in a manner similar to Likert's procedure (Edwards, 1957). For example, question number 3, "How well do you anticipate being able to work with the leader who has been assigned to your group?" was scored +5 for the response, "I anticipate being able to work effectively with her all the time," and +1 for the response, "I will not be able to work effectively with my group leader at all."

Responses for each question were summed across each group, and an overall mean group cohesiveness score was obtained for each group. A positive and significant correlation (rho = .62, $N = 14$, $p < .05$) was obtained between the two sets of ranked scores, implying, in general, there was some stability in how the groups perceived themselves at the beginning of the study and at the end.

It is also interesting to note that, in general, students perceived their fellow group members' attitudes toward the effectiveness of the group leaders similarly at the beginning and end of the study. Question 4 (Appendix D) yielded a rho correlation of .59 ($p < .05$) when scores obtained at the beginning and end of the study were correlated.

Based on the results of the above analyses it may be concluded that the leader-group relations, as measured by Seashore's index, remained relatively stable for the duration of the study.

Agreement of Group Observers

As stated earlier, the main dependent variable employed in the study involved the categorizing of verbal statements made by the leaders to the individuals comprising their respective groups. The degree to which the observers agreed to their use of behavioral categorizations will now be discussed.

Bales (1950) has suggested a method for appraising observer reliability. The basic interaction data recorded by the observers may be reduced to a table of the type shown in Table 5. For explanatory purposes the writer will designate a tabulation of observer A's data in the form of Table 5 as A, and a similar tabulation of observer B's data as B. Bales's procedure for assessing observer reliability will now be presented:

> One aspect of the problem of reliability concerns the relationship of A to B. The ideal of one-to-one correspondence is clearly not to be expected. On the other hand, conventional tests of significance at the .05 level are not applicable, for although the scores will usually represent less than the number of acts that would have been recorded by an omniscient observer, there is no reason to believe they were sampled at random. Acts which occur rapidly are probably underrepresented in the score, very dramatic acts are probably overrepresented, and classification errors derive from states of information and different mental "sets" of the observer which are assuredly not random. In short, there is no question as to whether or not these observers are sampling from the same population. The question is, "Can they score according to the directions?" We recognize below (Table 6) that the correspondence of A's scores with B's scores does not completely establish that "the" standard system is being used. It simply establishes that "a" system common to A and B is being used. Nonetheless, the correspondence between A and B is a legitimate part of our concern. A product-moment correlation coefficient is frequently used as a measure of observer reliability in situations of this type. The acceptance level is usually set in the vicinity of .9. This is not

satisfactory for the case at hand, for *r* tends to be relatively insensitive to variations in values with small densities. It is preponderantly determined by the large values of distribution. For this reason it is possible to find comparisons between observers which have an *r* above .9 which do not come within the .05 level when tested by Chi-Square. This latter measure tends to be very much more sensitive to the variations in the pairs of values of smaller magnitude. This characteristic is also in keeping with the probable interpretation of the summaries of interaction materials, for the possible significance of five acts of low over-all density is much greater than the possible significance of five acts of "analyzing the situation" which constitutes a substantial portion of the acts usually recorded. Use of Chi-Square is also indicated because it permits a concomitant test of both categorizing and unitizing, whereas *r* is insensitive to the number of acts within categories so long as the proportion of acts within categories to the total acts is constant. Chi-Square is more easily extended to situations where there are more than two observers, and is somewhat simpler to compute.

The reader should understand clearly that we are using Chi-Square as an index of goodness of fit which is to be applied to a situation which does *not* represent random sampling. The use of Chi-Square in this sense should be clearly disassociated from the more conventional applications. The significance of this difference becomes particularly evident when we consider the adoption of a value of Chi-Square which may be taken to indicate acceptable agreement between observers. We suggest the use of Chi-Square at the .50 (not .05) probability level. This level is arbitrary; another experimenter may wish to vary it on the basis of his experience.

To determine whether the Chi-Square value for a particular A B has a p of .50 or greater and is therefore acceptable, the following conventions are observed:

1) The total scores of the A and B tabulation are shown by categories for a common interval of interaction:

Categories	A	B
1	.	.
.	.	.
.	.	.
12	.	.

2) The average for A B for the category in question is taken as the theoretical value.

3) Any row in which *either* A or B has a cell with a frequency less than 5 will be collapsed and the sum of the respective A and B values will be accumulated in one row.

4) *r* (*c*-1) degrees of freedom will be used, where *r* is the number of rows, and *c* the number of columns.

The method is completely general and may be applied to any interval or combination of intervals the experimenter may choose.[9]

Table 5. Paradigm of Tabulation Employed in Appraising Reliability of Categorization (Source: Bales, 1950, p. 102)

	k minute intervals						
Category	1	2	.	.	.	k	Total
1	.	.	.	.	.	.	
2	.	.	.	.	.	.	
.	.	.	.	.	.	.	
.	.	.	.	.	.	.	
12	.	.	.	.	.	.	
Total							

The method explained above for assessing reliability was employed in this study in order to obtain increased sensitivity to categories which were used infrequently.

After each pair of observers completed their observation for a particular problem-solving session, they randomly chose three five-minute time intervals from the 50 minute session, summed across these three intervals and then proceeded to compute chi square as outlined in Table 6.

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[9] Bales, 1950, p. 101-4.

For each problem, the chi square value obtained from each group's observation period was divided by its degrees of freedom. The square root of this quotient was then obtained. This procedure was carried out for the following reason:

> For chi square, in this situation, the null hypothesis is that observers agree on the categorization of behavioral acts. The alternative hypothesis is that the observers do not agree. Under null conditions, the expectation of chi square is approximately equal to its degree of freedom. Its variance is equal to two times its degrees of freedom. Under null conditions the ratio of chi square to its degree of freedom is equal to approximately 1. If this approximate value is obtained, one may conclude that there is evidence that there is no systematic bias in terms of how the observers used the categories of verbal behaviors.[10]

Table 7 shows the values obtained by the observers on each group for nine of the ten problems. Observer agreement for problem number one was not ascertained. Summing across the 14 groups for any given problem, the mean value obtained is approximately 1. From these results it may be concluded that there was no significant bias involved in the observers' recording of the leaders' verbal behavior. It is important to note that the observers were not made aware of the study's hypotheses until the completion of the study. At the beginning of the study they were simply told that the investigator was interested in recording the verbal interactions between group leaders and their respective group members.

Another point should be mentioned concerning observer agreement. During

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[10] L. Wolins, Department of Psychology, Iowa State University, Ames. The use of chi square as an index of observer agreement. Private communication. 1968.

Table 6. Determination of Observer Reliability Following Bales's (1950, p. 110) Chi Square Procedure

	Frequencies					$\frac{(A - \bar{x})^2}{\bar{x}}$
Category	A		B		Mean	
2	17		16		16.5	.02
3	18		17		17.5	.01
5	56		61		58.5	.21
6	86		97		91.5	.33
7	20		22		21.0	.05
10	5		5		0.0	.00
1	4		1			
4	4		4			
8	1	14	0	11	12.5	.18
9	1		0			
11	0		5			
12	4		1			
Total	216		229		---	.80 x 2 = 1.60

the training period it was the consensus of the observers that one of the reasons their agreement was not perfect was that each observer recorded equally relevant, but different behavior. In a group setting, where observers attempt to record all verbal interactions, it is very likely that when several group members interact simultaneously, observers may center their attention upon different but equally relevant behaviors.

Based on the results discussed above it may be concluded that the observers recorded the verbal behavioral interactions of the leader to an acceptable degree of reliability. This is not to say that problems did not develop during the observational periods they recorded all verbal

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Table 7. Index of Observer Reliability for Nine Problem-Solving Sessions

Group Number	$\sqrt{\frac{x^2}{df}}$	Group Number	$\sqrt{\frac{x^2}{df}}$	Group Number	$\sqrt{\frac{x^2}{df}}$
Prob. No. 02		Prob. No. 03		Prob. No. 04	
01	1.05	01	.99	01	1.13
02	1.20	02	.73	02	.64
03	1.05	03	1.14	03	1.07
04	.81	04	.49	04	.88
05	.98	05	.47	05	1.13
06	1.05	06	1.22	06	1.30
07	.50	07	1.19	07	.62
08	.94	08	.59	08	.56
09	.57	09	1.01	09	.82
10	.97	10	1.87	10	.41
11	1.15	11	2.12	11	1.54
12	1.79	12	.33	12	.97
13	.79	13	1.66	13	.66
14	.77	14	.47	14	.67
	13.62 $\overline{X}$=.97		14.28 $\overline{X}$=1.02		12.40 $\overline{X}$=.88
Prob. No. 05		Prob. No. 06		Prob. No. 07	
01	.66	01	.45	01	missing data
02	1.57	02	1.37	02	.51
03	.57	03	.85	03	1.21
04	.82	04	.75	04	.37
05	.81	05	.53	05	1.65
06	.80	06	2.21	06	.98
07	.84	07	.50	07	.57
08	.96	08	.73	08	.61
09	.75	09	.53	09	.45
10	1.19	10	1.21	10	.84
11	.17	11	1.69	11	.63
12	.81	12	1.37	12	1.04
13	.77	13	.98	13	.00
14	.81	14	1.00	14	.73
	11.53 $\overline{X}$=.82		14.17 $\overline{X}$=1.01		9.59 $\overline{X}$=.68

Table 7. Continued

Group Number	$\frac{x^2}{df}$	Group Number	$\frac{x^2}{df}$	Group Number	$\frac{x^2}{df}$
Prob. No. 08		Prob. No. 09		Prob. No. 10	
01	.86	01	.24	01	1.47
02	.85	02	.73	02	1.21
03	.67	03	.98	03	.17
04	.40	04	.93	04	.86
05	.87	05	.28	05	.95
06	.72	06	.90	06	.36
07	.69	07	.92	07	.40
08	.28	08	1.11	08	.58
09	.41	09	.02	09	.51
10	.64	10	.50	10	1.31
11	.96	11	.69	11	1.73
12	2.07	12	1.01	12	.94
13	1.07	13	.90	13	.47
14	.91 $\bar{X}$=.81	14	.88 $\bar{X}$=.72	14	.84 $\bar{X}$=.89

interactions of the leader. Based on post-session questionnaires filled out after each session by the observers, it was found that there were some problems involved in recording the interactions. A common frustration experienced by them was that during the most active points of the group discussions all of the group members often talked at once. This necessarily meant that much rich interaction data were not recorded. Rather, the observer attempted to center her observation on the key people interacting as a particular time.

Another common finding was that group members often talked too quickly for the observers to record all that was said. Using paper and pencil to record the interactions probably impaired the observers' ability to record all the data they could have if they had used mechanical devices like those described and recommended by Bales (1950).

In spite of the factors which impaired the observers' being able to record at an optimal level, the agreement information enables one to conclude that the recorded interactions are, in general, reasonably valid and accurate ones.

Faculty Ratings

As discussed in the Procedure, ratings obtained independently from three nursing faculty members provided the criterion of group effectiveness. Each group submitted its answer to the faculty for rating after each problem-solving session. The raters were not aware of which group's paper they were rating at any given time.

Each rater judged each of the group's solutions for all ten problems. Certainty ratings, discussed in the Procedure, were used to rate the problems.

The obtained certainty ratings were converted to z-scores. These were then averaged and the resulting mean was the score assigned to a group for a particular problem.

From the Procedure it will be recalled that two criteria were used to rate the five unstructured problems. These were: (1) the extent to which the solution was original, and (2) the feasibility of the solution being implemented in real life.

Table 8 shows the results of the analysis of variance computed to determine rater differences and criteria differences for the unstructured problems. Only two main effects will be discussed at this point.

The effect due to raters (C) is highly significant ($F=37.32$, $df=2/104$, $p<.01$). This means that the three raters perceived the quality of the

Table 8. Analysis of Variance To Determine Rater Differences and the Effects of Using Two Criteria in Rating Solutions to Unstructured Problems

Source	df	SS	MS	F
A (Problem sessions)	4	52664.145	13166.035	3.729[a]
B (Groups)	13	375067.375	28851.336	8.171[a]
C (Raters)	2	262821.688	131410.813	37.218[a]
AxB	52	472980.000	9095.766	2.576[a]
AxC	8	94393.375	11799.172	3.342[a]
AxBxC	104	437848.625	4210.082	1.192
D (Criteria)	1	7117.742	7117.742	2.016
AxD	4	17729.914	4432.477	1.255
BxD	13	31523.324	2424.871	0.687
CxD	2	3210.133	1605.066	0.455
AxBxD	52	96537.063	1856.482	0.526
AxCxD	8	29829.270	3728.659	1.056
BxCxD	26	83955.063	3229.041	0.915
Error	130	459008.688	3530.826	
Total	419	2424689.000		

[a] Significant beyond .01 level.

solutions differently and rated them accordingly. However, since each rater judged all ten problems, this source of variance is accounted for in such a way as to not affect the validity of the criterion measure. Thus, the ratings of the three faculty members may be used to infer the effectiveness of the 14 groups.

The main effect due to using two criteria (D) rather than one was found to be insignificant. Thus, one may conclude that the raters judged the particular solution similarly on both criteria.

Since the type of response the rater made was not significant either as a main effect or in interaction with the other three variables, the analysis of the ratings of practicality for both structured and unstructured problems is reported in Table 9. This analysis summarizes ratings for all ten problems and reliability estimates are derived from this table.

Table 9. Analysis of Variance To Determine the Rater Differences for Both Unstructured and Structured Problems

Source	df	SS	MS	F
A (Problem sessions)	9	865926.250	96214.000	40.36[a]
B (Groups)	13	304034.875	23387.297	9.81[a]
C (Raters)	2	110976.125	55488.063	23.28[a]
AxB	117	689628.938	5894.262	2.47[a]
AxC	18	214131.688	11896.203	4.99[a]
BxC	26	60936.602	2343.715	0.98
Error	234	557843.750	2383.948	
Total	419	2803480.000		

[a] Significant beyond the .01 level.

Using the model: $Y_{ijk}=A_i+B_j+C_k+(AB)_{ij}+(AC)_{ik}+(BC)_{jk}+e_{ijk}$

where e_{ijk} NID(0, e^2),

the reliability of the ratings can be estimated from the expected mean squares and variance components. In this case the expected mean squares and variance components are as follows:

Source	df	Expected Mean Squares	Variance Components
A (Problem Sessions)	9	$e^2 + 42K_A^2$	2210
B (Groups)	13	$e^2 + 30K_B^2$	700
C (Raters)	2	$e^2 + 140K_C^2$	379
AxB	117	$e^2 + 3K^2_{AxB}$	1170

Source	df	Expected Mean Squares	Variance Components
AxC	18	$e^2 + 14K^2_{AxC}$	680
BxC	26	$e^2 + 10K^2_{AxC}$	
			2384

These estimated variance components indicated that the problem session effect is the most important source of variance and the rater effect is the least important source of variance. However, of primary interest is the reliability of the ratings derived from all three raters when evaluating the performance of each group during each session. This reliability is computed in two stages. The first stage provides the intraclass correlation,

$$\Gamma I = \frac{\sigma 2_A + \sigma 2_B + \sigma 2_{AxB}}{\sigma 2_A + \sigma 2_B + \sigma 2_{AxB}\ \sigma 2_e} = \frac{4080}{6464} = .63$$

The index is the reliability of a rating from a single rater. In order to estimate the reliability of the average rating of a particular group and a particular problem we use the formula

$$\Gamma = \frac{{}^3\Gamma I}{1+2\Gamma_I} = \frac{1.89}{2.26} = .83$$

The index means that 83 percent of the variance in the average rating of a group for a particular problem is true variance and the remaining 17 percent is due to error.

The above results and discussion have concerned the measures used to: (1) identify leadership style, (2) assess leader-member relationships, (3) estimate group cohesiveness, (4) determine the extent to which observers agreed in their classification of leader behavior, (5) estimate the validity of the faculty's ratings, (6) investigate the efficacy of using two criteria to judge the unstructured problems, and (7) assessing interrater reliability for the faculty's ratings.

Based on the statistical analyses employed it may be concluded that the measures used were reliable and appropriate for the problem investigated.

For both analyses of variance discussed above, an F-ratio significant beyond the .01 level was obtained for the A(problem-sessions) x B(group) interaction. This means that there were significant differences between groups across the ten problem-solving sessions. This interaction term was broken down into its component parts in an attempt to account for the sources of variance involved in the interaction. That is, part of group differences are the two variables manipulated in this study, LPC and SOC (sociometric status). These analyses resulted in no significant differences.

The within-group analysis was also performed and the ten problems were broken down into structured and unstructured. The only significant effect was the interaction between structure and problem-solving sequence. The reader should recall that the sequence employed for solving these ten problems is described on page 39. The structure of problem sequence interaction was highly significant ($F=6.48$, df 4/135, $p<.01$). The mean certainty ratings from the three raters showing the groups' performance across the ten problem-solving sessions (sequence) are presented in Table 10.

It is evident that the raters perceive the later solutions as being better than the earlier ones and they perceive the structured problems as being poor at first and excellent later, whereas they perceive the unstructured problems as changing from slightly below mediocre to slightly above

Table 10. Change in Group Performance Across Ten Problem-Solving Sessions

Time	Mean Performance: Unstructured Problems	Time	Mean Performance: Structured Problems
1	47.02	2	20.14
4	47.24	3	28.71
5	54.64	6	67.40
8	63.24	7	77.81
9	56.79	10	82.67

mediocre. One interpretation of this finding is that the groups became more cohesive from one session to another and thus were better able to function. Another possible explanation is that practice effects from session to session were operating, thereby influencing performance across the ten sessions.

Analysis of Leaders' Behavior

There were three independent analyses performed on the data. The first involved analyzing each group leader's responses to each specific member in her group, across the ten problem-solving sessions. How the leader in Group 5 responded to Person 2 across the ten problems is an example of the kind of data analyzed here. The second analysis entailed a breakdown of the leader's responses to the group as a whole, i.e., her responses to everyone in general and to no one in particular. The third analysis concerned the leader's responses to all individuals in her group, i.e., how the leader responded to all individuals across the ten problems. This analysis did not include responses made to the group in general.

Leader's Responses to Each Specific Individual

The "discrimination hypothesis" offered by Butterfield (1967) suggests that Fiedler's concept of psychological distance may be interpreted to mean that leaders, in recognizing differences among people, behave toward them in a way consonant with the perceived differences among them. The discrimination interpretation argues that the people whom Fiedler calls distant leaders may or may not actually behave in a distant manner,

> in fact, since a leader is probably "distant" with some workers and "close" with others. What matters is that the leader's perception of the world around him, i.e., of his associates, is sharper. And, having perceived differences between people, he is thus able to behave toward them differently.[11]

In line with the discrimination hypothesis, it was hypothesized in this study that an individual leader would behave differently in his verbal responses towards different members of his group. More specifically, a qualitative difference in the types of verbal statements made by leaders was predicted as well as a quantitative difference, i.e., leaders were expected to interact more with some individuals in their groups than with others.

When recording the groups' interactions, the observers split the 50 minute time period into ten intervals of five minutes each. This permitted the pattern of responses across time to be analyzed. By determining leaders' response changes from one five-minute interval to the next, it was possible to see whether they addressed some members early in the session and others later in the session.

To test the discrimination hypothesis a separate analysis of variance was computed for each of the 14 groups. The analysis was performed on the square-root transformation of the number of responses made by a leader to each of her group members on each of ten categories.

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[11] Butterfield, 1967, p. 42.

It is important to note that of the 19 categories, only ten were used sufficiently by the leaders interacting with their respective group members to include in the analysis. Responses of the infrequently used categories (1, 3, 7, 9, 10, 15, 16, 17, 18) were pooled with those of category 19 for this analysis.

The ten categories analyzed were:

2. Shows solidarity through raising the status of others
4. Shows tension release, laughs
5. Shows agreement, concurrence, compliance
6. Gives a procedural suggestion
8. Gives opinion, evaluation analysis, expresses feeling or wish
11. Gives orientation, information, passes communication
12. Draws attention, repeats, clarifies
13. Asks for opinion, evaluation, analysis, expression of feeling
14. Disagrees, maintains a contrary position
19. Asks for repeat, clarification

Table 11 is an example of the other 13 analysis of variance tables that were computed for each group.

The main effects due to A(categories), B(intervals), and C(people) were all significant beyond the .05 level for all 14 groups, and in many cases beyond the .01 level. However, in terms of the discrimination hypothesis only the C main effect, the AxC and the BxC interactions are relevant. Variance components were computed for each of these effects.

Table 11. Analysis of Variance To Test Leader's Behavior as It Is Affected by Verbal Categories, Time Intervals Within a Problem-Solving Session, and Individuals in the Group

	df	SS	MS	F	Var. Comp.
A(Categories)	9	73.489	8.165	6.78[a]	
B(Intervals)	9	70.492	7.832	6.51	
AxB	81	288.663	3.564	2.96	
C(People)	5	55.089	11.018	9.15	.0982
AxC	45	113.529	2.523	2.10	.0132
BxC	45	62.763	1.395	1.16	.0190
Error	405	487.508	1.204		
Total	599	1151.533			

[a] Significant beyond the .01 level.

The main effect due to C tells about the amount of verbal communication which took place between a given leader and her respective group members. The AxC interaction term tells the extent to which the leader addresses different members of her group differently, and the BxC interaction answers the question of whether the leader addresses some individuals early in the sessions and others late in the sessions.

The three variance components due to the three effects described above were submitted to regression analysis. The three variance components were regressed on LPC, sociometric status (SOC), and the interaction between the two. All F-ratios obtained for this analysis (i.e., leader's responses to each individual in her group) were found to be insignificant.

Perhaps it might be well to point out at this time a finding that appears several times in the results. In many cases significant differences were found between the variables of interest when the overall group differences are tested. That is, there are differences among groups but such differences do not appear to be related to the leader characteristics manipulated in this study for this analysis. Apparently individual differences among individuals within the different groups were such that between-group differences were present to a significant degree. This happened because of the fact that group members were randomly assigned to each of the 14 groups. It is the writer's opinion that this overall group effect has implications for Fiedler's research findings. The writer was unable to find any studies conducted by Fiedler (1967b) which employed a design allowing sources of variance to be broken down into main effects and interaction terms. Rather, all of his research has been correlational in nature. It is suggested by the writer that some of Fiedler's findings may be due in part to the individual differences of people comprising a particular group rather than to the effects of the leader's style and the other variables included in his theory. The significant group effects found in this study suggest that more experimental investigations are needed in which the research systematically manipulates the variables of Fiedler's model. The results found here also suggest a need for controlling for relevant individual differences which might interact in such a way as to significantly influence group performance.

Based on the above findings, where the unit of analysis used was the leader's verbal communication with each specific individual in her groups, the following may be concluded:

1. There were no significant differences among the types of leaders in the variance of the number of responses made to individuals in their groups.

2. There were no significant differences among the types of leaders in the variance concerning change in the number of responses made to

various individuals in their groups.

3. There were no significant differences among types of leaders with respect to the extent to which they respond *qualitatively* differently (using different categories) to different members of their groups.

Based on the findings reported above, the discrimination hypothesis is not supported. Leaders tended to talk to all members of their particular group relatively equally. Further, there was no significant qualitative differences in the types of verbal statements made by the leaders to specific members of their groups.

In addition to the above-discussed analyses it was decided to determine how much the leaders used each specific verbal category. Since the discrimination hypothesis was not supported, the question of whether leaders of different leadership styles differ in some other way came to mind. It was decided to calculate the leaders' *total* communication with their group members, excluding leader-to-group responses.

That is, the analysis of variance for each group provided the mean for each category for each leader. This mean,

$$\overline{X} = \frac{\sum_{k=1}^{n_k} \sum_{j=1}^{10} \sum_{i=1}^{10} Y_{ijk}}{10n_k}$$

where *i* refers to the 10 5-minute intervals, *i* refers to the 10 problem sessions and n_k refers to the number of people in group k, was used to compute each leader's use of the categories. The number of people per group varied from 3 to 7, excluding the leader. The high LPC groups had an average of 5.3 members per group and the low LPC groups had an average of 4.4 members per group.

This mean of responses made by high LPC leaders was compared with the total number of mean responses made by low LPC leaders. Table 12 illustrates the results of this comparison. For each of the ten categories the low LPC leaders have a higher amount of usage per individual. However, if one corrected the values in Table 12 for the difference in the size of the groups, the total number of responses made by Low LPC leaders would not greatly exceed the total number of responses made by high LPC leaders. Further evidence for analysis of total number of responses is included in Table 17, to be discussed later.

Based on the above finding, the next question asked was whether task-oriented leaders are more effective than the high LPC leaders, using group performance ratings as the criterion of effectiveness.

Since leadership style was not found to be significantly associated with the amount, quality, and change of verbal behavior on the part of the leaders when using analysis of variance, it was decided to answer this question by using one of Fiedler's methods of analyzing such data.

Fiedler's most often used statistic is the Spearman rank correlation, sometimes called rho. This statistic was employed in the present study to determine the degree of relationship existing between leadership style and group performance.

Table 13 presents the rank ordering of the 14 groups based on the faculty ratings averaged across the ten problems, along with the ranking of the respective leaders, based on their LPC scores. A positive correlation was found between leadership style and group effectiveness ($r=.63$, $N-14$, $p<.05$). Groups led by high LPC leaders did significantly better on both structured and unstructured problems.

Table 12. Mean Responses (based on square root transformation) of High and Low LPC Leaders to Specific Group Members

Categories		High LPC	Low LPC
2:	Shows solidarity through raising the status of others	1.77	2.33
4:	Acknowledges, understands, recognizes	1.85	2.46
5:	Shows agreement, concurrence, compliance	1.61	1.90
6:	Gives a procedural suggestion	1.75	2.42
8:	Gives opinion, evaluation, analysis, expresses feeling or wish	1.87	2.90
11:	Gives orientation, information, passes communication	1.75	2.31
12:	Draws attention, repeats, clarifies	1.94	2.13
13:	Asks for opinion, evaluation, analysis, expression of feeling	1.60	1.91
14:	Disagrees, maintains a contrary position	2.09	2.37
19:	Asks for repeat, clarification	1.65	1.99

Table 13. Ranking of Groups on Ratings Obtained for Each of Ten Problems Compared to Ranking of Group Leaders Based on LPC Scores

Group Number	Ratings (converted to scores)	Group Ranking Based on Scores	LPC Scores	Leadership Style	Leadership Ranking Based on LPC Scores
9	1.57	1	94	High LPC	1
5	1.21	2	71	High LPC	6
4	.87	3	73	High LPC	4.5
8	.86	4	88	High LPC	2
3	.81	5	65	Low LPC	8
1	.74	6	73	High LPC	4.5
10	.60	7	49	Low LPC	13
11	.53	8	60	Low LPC	10
12	.50	9	80	High LPC	3
13	.46	10	64	Low LPC	9
7	.42	11	27	Low LPC	14
6	.38	12	58	Low LPC	11
14	.27	13	52	Low LPC	12
2	.25	14	70	High LPC	7

This finding is at odds with Fiedler's model in that low LPC leaders are predicted to have more effective groups where the task is structured, leader-member relations are good, and position power is strong (Octant III, Figure 2, p. 19). Such was not the case for this study. High LPC leaders did significantly better on both structured and unstructured problems. Whereas this is Fiedler's general finding, there are exceptions as is evidenced in the scatter-plot point found in Figure 2 which represents a correlation of +.80 between LPC and group performance. Fiedler (1967b) points out that each of the points in the plot represents a separate study; hence, just as in one of his own studies, the finding of LPC being positively correlated with group effectiveness was found in the present study. This being the case, the hypothesis that task-oriented leaders would be more effective in structured tasks was not supported in this study.

The writer interprets the significant positive correlation between LPC and group effectiveness (both structured and unstructured tasks) in the following way. The individuals who made up the 14 groups were all student nurses. The program of study which they pursue is highly relationship-oriented in Fiedler's sense of the term. The relationship-oriented leader is described as a considerate, permissive, or nondirective type of leader (Fiedler, 1967b). These behavioral attributes are exactly the types inculcated and reinforced by the faculty of St. Mary's collegiate nursing program. There is some reason to think that the students identify rather closely with this philosophy of nursing, and that they manifest this identification in their approach to patient-care. That this opinion is to some extent valid is based upon follow-up information about graduates of the program. There has been a significant number of students who took jobs in hospitals noted for their task-oriented approach to patient care. As a result of this environment, several of them have changed jobs in order to utilize the relationship-oriented, patient-care approach.

It is the opinion of the writer that the overall nursing philosophy stressed at St. Mary's outweighed the specific type of task (structured or unstructured) which the groups worked on. It is hypothesized that what the group members responded to most was the type of leadership style (high LPC) which best represents the relationship-oriented approach (Fiedler, 1967b) to patient care. It is suggested that the overall philosophy of nursing emphasized by this institution be looked upon as a higher-order organizational variable which influenced the effectiveness of the leaders to a significant degree. If this is so, it is the writer's opinion that the students would find it more natural to identify with relationship-oriented leaders and thereby prove to be more effective groups. Assuming this is the case, the effect of task structure on leadership effectiveness in Fiedler's contingency model could have been overshadowed by this higher-order variable. Fiedler's model does not include this kind of variable. It is suggested that this modification of the theory be tested in future research.

Leader's Responses to the Group

The second set of data analyzed consisted of leaders' verbal communications with their groups in general. For example, if a leader made a procedural suggestion, but directed it toward no one in particular, the observer recorded it as a "1-0," that is, "leader to group" response. For this set of data the following categories of verbal behavior were included in the analysis.

4. Shows tension release, laughs
6. Gives a procedural suggestion
8. Gives opinion, evaluation analysis, expresses feeling or wish
11. Gives orientation, information, passes communication
12. Draws attention, repeats, clarifies
13. Asks for opinion, evaluation, analysis, expression of feeling
19. Asks for repeat, clarification.

The remaining categories were not used frequently enough to include in the analysis.

The answers to the following questions were sought in the leader to group responses:

1. Do some leaders talk more than other leaders?
2. Do different leaders use different categories?
3. Does the trend in talking in each one-hour period differ among leaders?

The following statistical procedures were employed to answer the above stated questions:

For each problem and for each category, the leaders' responses to the group were regressed on the linear and quadratic orthogonal ploynomials for the ten 5-minute intervals. Since there were seven categories used, a total of 7 times 10 times 14 = 980 sets of regression coefficients were obtained. A set consisted of three members: intercept, linear, and quadratic. The intercept coefficient indicates the number of times the leader addressed the groups; the linear indicates the extent to which such conversation waxed or waned during the 50-minute period; the quadratic indicates if such conversation "picked up" or "sagged" in the middle of the

50-minute session.

Each member of a set was an entry in a three-way analysis of variance table: groups by problem sessions by categories.

If the main effect due to groups, or the groups x problem sessions or the groups x category interactions were significant, then another analysis of variance by means of regression was employed in order to determine effects due to LPC, sociometric status (Soc), LPC x SOC, and problem.

Table 14 shows the analyses of variance computed to answer the above-stated questions. Based on the significant F-ratios found from these analyses, a regression was conducted on the means of the main effects and interactions of interest.

The between-group linear analysis showed that there was a significant difference between groups led by high LPC and low LPC leaders (F=6.36, df=13, p<.05). In inspecting the means for this term it was found that the low LPC leader addressed the group relatively early in the hour, and that the high LPC leader addressed the group relatively later in the session. The mean slope for low LPC leaders was -.056, whereas the mean slope for high LPC leaders was -.102.

This finding is interpreted to mean that the low LPC leader, being more concerned about the task and getting it finished, began the group discussions by interacting with the group in such a way as to get them involved with solving the problem at hand (e.g., giving procedural suggestions, etc.) The high LPC leader on the other hand, interacted with the group significantly more towards the end of the session.

It will be recalled that Fiedler describes the high LPC leader as being more nondirective and more passive than the low LPC leader. Assuming this

Table 14. Analysis of Variance Based on Leader-to-Group Responses, Showing Effects Due to Groups, Problem Sessions, and Categories

Source	df	SS	MS	F
Intercept Values				
A(Groups)	13	100.269	7.713	6.344[a]
B(Problem sessions)	9	32.695	3.633	2.988[a]
C(Categories)	6	863.279	143.880	118.340[a]
AxB	117	264.626	2.262	1.860[a]
AxC	78	166.314	2.132	1.754[a]
BxC	54	101.387	1.878	1.544
Error	702	853.501	1.216	
Total	979	2382.072		
Linear Values				
A(Groups)	13	1.671	0.129	10.11[a]
B(Problem sessions)	9	1.158	0.129	10.12[a]
C(Categories)	6	2.307	0.385	30.23[a]
AxB	117	3.465	0.030	2.33[a]
AxC	78	1.936	0.025	1.95[a]
BxC	54	0.821	0.015	1.19
Error	702	8.932	0.013	
Total	979	20.291		
Quadratic Values				
A(Groups)	13	0.500	0.038	1.78[b]
B(Problem sessions)	9	0.619	0.069	3.17[a]
C(Categories)	6	3.976	0.663	30.60[a]
AxB	117	4.788	0.041	1.89[a]
AxC	78	1.438	0.018	0.85
BxC	54	1.126	0.021	0.96
Error	702	15.203	0.022	
Total	979	27.651		

[a] Significant beyond the .01 level.

[b] Significant beyond the .05 level.

to be the case, the high LPC leaders, in general, tended not to get involved much with the group until they were well on their way to solving the problems. Rather, they let the group decide upon its course of action and the ways in which they would solve the problem. These leaders interacted more with the group toward the end of the session, possibly bringing together suggestions into some meaningful frame of reference.

The only effect significant in these and subsequent within-group analyses was that due to categories (F=3.19, df=6/37, p<.05). This means that different categories were employed by a given leader across the 50-minute session. This finding needs no interpretation. LPC and sociometric status were not found to influence leader-to-group responses. Neither did differently styled leaders use different categories. Thus, the hypothesis that there would be a difference in the types of categories used by high LPC and low LPC leaders is not confirmed, using the leader's responses to her group in general as the unit of analysis.

An ancillary finding is based, in part, on Table 14. Attending to the main effect, problem sessions, one notes the linear effect is large (F=10.12, df=9/702) whereas the comparable intercept and quadratic values are relatively small (F=2.99, F=3.17, respectively). These slopes for the ten problem sessions are presented below:

Session	1	2	3	4	5	6	Easter Recess	7	8	9	10
Slope	-.16	-.06	-.05	-.05	-.05	-.08		-.12	-.08	-.07	-.07

These negative slopes indicate the leader does most of his talking to the group early in the session. This is most marked in the first session and to a lesser degree in the seventh session, following a two-week Easter recess for the participants of this study. It is reasonable to expect this negative slope on the first session since it is the leaders responsibility to provide basis for organization and interaction. It appears these leaders felt it necessary to reassert the group situation following the vacation. Since the category by problem session was not significant for the linear values, there was no basis for inquiring how these leaders did this.

Based on the results of the above analyses it may be concluded that:

1. There are no significant differences in the amount which differently styled leaders communicate with their groups, using leader-to-group responses as the unit of analysis.

2. The trend in talking in each one hour period differs among leaders; low LPC leaders talk more during the initial stages of the 50-minute sessions; high LPC leaders interact significantly more towards the end of the sessions. On the average, however, there is no evidence these two types of leaders address their groups with different frequency.

3. Differently styled leaders do not use different categories for the leader's responses to the groups in general.

Leader to Any Individual Responses

The third set of data analyzed consisted of leaders' verbal interactions with any individual in their group.

Ten categories were used in this analysis. The rest were deleted due to their infrequent use. The ten retained were:

2. shows solidarity through raising the status of others
4. acknowledges, understands, recognizes
5. shows agreement, concurrence, compliance
6. gives a procedural suggestion

8. gives opinion, evaluation, analysis, expresses feeling or wish
11. gives orientation, information, passes communication
12. draws attention, repeats, clarifies
13. asks for opinion, evaluation, analysis, expression of feeling
14. disagrees, maintains a contrary position
19. asks for repeat, clarification.

The questions posed for the analysis and the procedure used in answering them were identical to the questions asked and procedure followed in the leader-to-group responses (see questions and procedure on page 67).

It differed, however, from the previous analyses done on responses of leader to each specific individual. First of all the specific individual responded to by the leader was not considered nor was the number of individuals in a group of concern. Also, no transformation of the frequencies were made. The basic data for these analyses were simply the number of times a leader responded to some individual. Each such response was classified into one of the ten categories. These data were tabulated separately for each problem session.

Table 15 shows the analyses of variance computed to answer the questions stated on page 67. F-ratios were computed for intercept, linear and quadratic values. The intercept coefficient indicates the number of times the leader addressed the groups; the linear indicates the extent to which such conversation increased or decreased during the 50-minute period; the quadratic indicates if such conversation "picked up" or "sagged" in the middle of the problem-solving session.

Significant F-ratios were found for the following main effects: A(Groups), B(Problem Sessions) and C(Categories). Significant interactions

Table 15. Analysis of Variance Based on Leader to Any Individual Responses, Showing Effects Due to Groups, Problem Sessions, and Categories

Source	df	SS	MS	F
Intercept Values				
A(Groups)	13	70.678	5.44	21.42[a]
B(Problem Sessions)	9	18.171	2.02	7.96[a]
C(Categories)	9	240.168	26.69	105.16[a]
AxB	117	80.766	0.69	2.72[a]
AxC	117	123.626	1.05	4.16[a]
BxC	81	44.406	0.55	2.16[a]
Error	1053	267.217	0.25	
Total	1399	845.033		
Linear Values				
A(Groups)	13	0.539	0.041	11.11[a]
B(Problem Sessions)	9	0.091	0.010	2.69[a]
C(Categories)	9	1.135	0.126	33.83[a]
AxB	117	1.196	0.010	2.74[a]
AxC	117	0.851	0.007	1.95[a]
BxC	81	0.532	0.006	1.76[a]
Error	1053	3.927	0.003	
Total	1399	8.270		
Quadratic Values				
A(Groups)	13	0.437	0.035	5.0[a]
B(Problem Sessions)	9	0.151	0.017	2.5[a]
C(Categories)	9	0.478	0.053	8.01[a]
AxB	117	1.351	0.012	1.74[a]
AxC	117	1.236	0.011	1.59[a]
BxC	81	0.643	0.008	1.19[a]
Error	1053	6.979	0.007	
Total	1399	11.276		

[a] Significant beyond the .01 level.

were found for AxB, and AxC terms. All F-ratios were significant beyond the .01 level. In breaking down the significant interaction terms only one significant F-ratio was found. That was for the LPC x category interaction (F=2.13, df=9/90, p<.05). This means that for the leaders' responses to any individual in their group, differently styled leaders used the categories differently.

Table 16. Mean Number of Times Each of Ten Categories Were Used by High LPC Leaders and Low LPC Leaders, Using the Leader's Responses to Any Individual in Her Group as the Unit of Analysis

Category	High LPC	Low LPC
2) Shows solidarity	1.06	1.70
4) Acknowledges, understands	8.00	11.33
5) Shows agreement, compliance	1.76	2.52
6) Gives a procedural suggestion	2.91	2.71
8) Gives opinion, evaluation	7.61	12.48
11) Gives orientation, information	2.38	4.23
12) Draws attention, repeats	3.59	4.86
13) Asks for opinion, evaluation	2.43	4.36
14) Disagrees, maintains contrary position	1.59	1.24
19) Asks for repeat, clarification	2.70	2.55

Table 16 shows a breakdown of the mean number of times that the high LPC leaders and low LPC leaders used each of the ten categories. The results of this breakdown appear similar to those found when the unit of analysis was leader to each individual in her group.

Table 16 indicates that the low LPC leaders talked to individuals more than high LPC leaders. This, as is the case with Table 12, may be a function of the number of people in the groups of these two kinds of leaders. However, the significant finding is with respect to the interaction rather than the main effect. Table 16 indicates that categories 6, 14, and 19 are used more by the high LPC leaders when addressing individuals whereas the remaining categories are used more frequently by low LPC leaders. Judging from the content of these categories there results suggest that high LPC leaders are more directive than low LPC leaders and low LPC leaders are more supportive.

SUMMARY AND CONCLUSIONS

This study, which concerned the effects of different leadership styles on group performance, tested Fred Fiedler's Contingency model of leadership effectiveness in a field setting. Subjects were 86 nursing students from a large midwestern hospital.

Two styles of leaders as defined by Fiedler, task-oriented and relationship-oriented, were paired with high and medium sociometrically chosen peers. Based on leadership style and sociometric scores, 14 individuals representing the two styles and two levels of sociometric status were designated as leaders for 14 small groups (average group size = 5.85, including the leader). Leaders and group members were randomly assigned to groups.

The groups worked on five structured and five unstructured problems, each problem-solving session lasting for 50 minutes.

The main purpose of the study was to investigate Fiedler's trait of "psychological distance" by recording all verbal interactions which transpired between a given leader and her respective group members. Each verbal statement made by the leaders was categorized by group observers into one of 19 categories.

It was hypothesized that group leaders would respond to their respective group members in different ways, based on the assumption that the leader's ability to discriminate among individuals is accompanied by a corresponding ability to behave towards them in a manner consonant with the perceived differences ("discrimination hypothesis"). In line with Fiedler's model it was further hypothesized that groups with relationship-oriented leaders would perform more effectively on the unstructured problems and that groups with task-oriented leaders would perform in a superior fashion on the structured problems.

Results of the study were as follows:

1. With regard to the "discrimination hypothesis" there was no evidence that differently styled leaders varied in the number of responses made to specific individuals in their respective groups. Furthermore, there were no significant differences among types of leaders with respect to the extent to which they responded qualitatively differently (using different verbal categories) to different members of their groups. Also, there were no significant differences among the types of leaders in the variance concerning change in the number of responses made to various individuals in their groups. Thus, the discrimination hypothesis was not supported in this study.

2. High LPC scores (representing relationship-oriented leaders) were found to be positively correlated with group effectiveness, regardless of whether the tasks were structured or unstructured. Leader-group member relations, as measured by sociometric questions, were not found to significantly influence group effectiveness.

3. It was found that task-oriented leaders (leaders who obtained low LPC scores) addressed their group members relatively early in the problem-solving sessions, whereas high LPC, relations-oriented leaders, addressed their group members relatively later in the session. On the average, however, there was no evidence that the two types of leaders addressed their groups with different frequency.

4. It was found that, in general, task-oriented leaders interacted more with their group members than did relation-oriented leaders. Moreover,

it was found that category 6 (gives procedural suggestions); category 14 (disagrees, maintains a contrary position); and category 19 (asks for repeat, clarification), were used more by the relations-oriented leaders when addressing individuals, whereas the remaining categories were used more frequently by task-oriented leaders. Judging from the content of these categories these results suggest that high LPC leaders were more directive than low LPC leaders were more supportive. It will be recalled that one of the main purposes of the study was to measure the verbal interactions of high and low LPC leaders in an attempt to obtain behavioral data which would help clarify the meaning of the trait, "psychological distance." The hypothesis that leaders of different styles would use different kinds of verbal statements in communicating with their respective group members was not confirmed. Rather, the results of this study suggest that the two types of leaders differ in the amount of verbal involvement with their groups. The task-oriented, low LPC leader talks significantly more to her group members than do high LPC leaders. In one way this finding fits Fiedler's model in that he describes low LPC leaders as directive, assertive, aggressive, etc. That is, the low LPC leader is more active. This is what the greater use of verbal communication implies. On the other hand, Fiedler contends that the low LPC leader is "more aloof, more reserved, not warm or accepting" (Fiedler, 1960, p. 591). The results of the study suggest just the opposite. The low LPC does get involved, is not aloof (if verbal communication is taken as an indication of involvement), and is warm and accepting as evidenced in the categories of verbal behavior participated in (e.g. shows solidarity by raising the status of others). Moreover, the high LPC, relationship-oriented leaders tended to be more directive and disagreed more with their group members than did the task-oriented leaders. It is suggested that follow-up research include not only verbal behavior but other overt behaviors as well in an attempt to gain better understanding into the meaning of psychological distance.

Another relevant finding of this study--the superior performance of the groups led by high LPC leaders, regardless of whether the task was structured or unstructured--was interpreted in terms of a possible higher-order organizational variable operating in such a way as to affect group performance. It is suggested by the writer that future research include measures to test this interpretation.

Accounting statistically for the variance due to individuals making up the respective groups is also seen as a meaningful finding for the study. Since most of Fiedler's research is correlational in nature, he has not been able to test for this effect. The present study suggests a need for more experimental studies, designed in ways which will enable the researcher to account for such sources of variance.

REFERENCES

Bales, R. F. Interaction process analysis. Cambridge, Mass.: Addison-Wesley, 1950.

Blum, M. L., and Naylor, J. C. Industrial psychology: its theoretical and social foundations. New York: Harper & Row, 1968.

Borgatta, E. F., and Crowther, Betty. A workbook for the study of social interaction processes. Chicago: Rand McNally, 1965.

Butterfield, D. A. Supervisory behavior and effectiveness: A review of empirical research and current thinking. Mimeographed. Ann Arbor, Michigan: Department of Psychology, University of Michigan, 1967.

Crowley, W. H. Three distinctions in the study of leaders. Journal of Abnormal and Social Psychology, 1928, 23, 144-157.

Deutsch, M. The effects of cooperation and competition upon group processes. Human Relations, 1953, 6, 129-152.

Edwards, A. L. Techniques of attitude scale construction. New York: Appleton-Century-Crofts, 1957.

Fiedler, F. E. Assumed similarity measures as predictors of team effectiveness. Journal of Abnormal and Social Psychology, 1954, 49, 381-388.

Fiedler, F. E. The influence of leader-keymen relations on combat crew effectiveness. Journal of Abnormal and Social Psychology, 1955, 51, 227-235.

Fiedler, F. E. The leader's distance and group effectiveness. In D. Cartwright and A. Zander (Eds.), Group dynamics: research and theory. (2nd ed.) Evanston, Ill.: Row, Peterson, 1960, 586-606.

Fiedler, F. E. A contingency model of leadership effectiveness. In L. Berkowity (ed.), Advances in experimental social psychology. Vol. 1. New York: Academic Press, 1964. Pp. 150-190.

Fiedler, F. E. The effect of leadership and cultural heterogeneity on group performance: A test of the contingency model. Journal of Experimental and Social Psychology, 1966, 2, 237-264.

Fiedler, F. E. The effect of inter-group competition on group member adjustment. Personnel Psychology, 20, 1967, 33-44. (a)

Fiedler, F. E. A theory of leadership effectiveness. New York: McGraw-Hill, 1967. (b)

Fiedler, F. E. Personality and situational determinants of leadership effectiveness. In D. Cartwright and A. Zander (Eds.), *Group Dynamics*. (3rd ed.) New York: Harper & Row, 1968. Pp. 362-380.

Fiedler, F. E. and Meuwese, W.A.T. The leader's contribution to task performance in cohesive and uncohesive groups. *Journal of Abnormal and Social Psychology*, 1963, *67*, 83-87.

Fiedler, F. E. Meuwese, W.A.T., and Oonk, Sophie. Performance of laboratory tasks requiring group creativity. *Acta Psychologica*, 1961, *18*, 100-119.

Fleishman, E. A. *Studies in Personnel and Industrial Psychology*. Homewood, Ill.: Dorsey Press, 1961.

Godfrey, E. P., Fiedler, F. E., & Hall, D. M. *Board, management, and company success*. Danville, Ill.: Interstate Printers and Publishers, 1959.

Guilford, J. P. *Fundamental statistics in psychology and education*. New York: McGraw-Hill, 1965.

Hutchins, E. B., and Fiedler, F. E. Task oriented and quasitherapeutic role function of the leader in small military groups. *Sociometry*, 1960, *23*, 393-406.

Julian, J. W., Bishop, D. W., and Fiedler, F. E. Quasitherapeutic effects of inter-group competition. *Journal of Personality and Social Psychology*, 1966, *3*, 321-327.

Lewin, K., & Lippitt, R. An experimental approach to the study of autocracy and democracy: A preliminary note. *Sociometry*, 1938, *1*, 292-300.

Myers, A. E. Team competition, success, and adjustment of group members. *Journal of Abnormal and Social Psychology*, 1962, *65*, 325-332.

Osgood, C. E., Suci, G. A., & Tannenbaum, P. H. *The measurement of meaning*. Urbana: Univ. of Illinois Press, 1957.

Pigors, P. *Leadership or domination*. Boston: Houghton-Mifflin, 1935.

Redl, F. Group emotion and leadership. *Psychiatry*, 1942, *5*, 573-596.

Seashore, S. E. *Group cohesiveness in the industrial work group*. Ann Arbor: Survey Research Center, Institute for Social Research, University of Michigan, 1954.

Shartle, C. L. *Executive performance and leadership*. Englewood Cliffs, N. J.: Prentice-Hall, 1956.

Shaw, M. E. Annual Technical Report, 1962. Gainesville, Fla.: Univ. of Florida, 1962.

Shaw, M. E., and Blum, J. M. Effects of leadership style upon group performance as a function of task structure. *Journal of Personality and Social Psychology*, 1966, *55*, 238-242.

Wolins, L. Problems in the Analysis of Numbers Assigned to Stimuli by Judges. Mimeographed. Ames, Iowa: Department of Psychology, Iowa State University of Science and Technology, 1964.

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APPENDIX A

ASo and LPC Measures

Name ______________________________ Co-workers

How we think of our co-workers is also important. Think of some one with whom you have been able to work best, a person with whom you are able to get a job done easily and well and describe that person on this form.

Please remember that there are no right or wrong answers. Work rapidly, your first answer is likely to be the best. Please do not skip any items and mark each item only once.

Friendly_____:_____:_____:_____:_____:_____Unfriendly

Cooperative_____:_____:_____:_____:_____:_____Uncooperative

Quits easily_____:_____:_____:_____:_____:_____Keeps trying

Calm_____:_____:_____:_____:_____:_____Upset

Confident_____:_____:_____:_____:_____:_____Unsure

Immature_____:_____:_____:_____:_____:_____Mature

Bold_____:_____:_____:_____:_____:_____Timid

Ungrateful_____:_____:_____:_____:_____:_____Grateful

Energetic_____:_____:_____:_____:_____:_____Tired

Impatient_____:_____:_____:_____:_____:_____Patient

Thoughtless_____:_____:_____:_____:_____:_____Thoughtful

Frank_____:_____:_____:_____:_____:_____Secretive

Careless_____:_____:_____:_____:_____:_____Careful

Easygoing_____:_____:_____:_____:_____:_____Quick-tempered

Practical_____:_____:_____:_____:_____:_____Impractical

Boastful_____:_____:_____:_____:_____:_____Modest

Intelligent_____:_____:_____:_____:_____:_____Unintelligent

Gloomy_____:_____:_____:_____:_____:_____Cheerful

Responsible_____:_____:_____:_____:_____:_____Undependable

Efficient_____:_____:_____:_____:_____:_____Inefficient

Name________________________________ Co-Workers

Everybody can work better with some people than with others. Think of someone with whom you have been able to work least well, a person with whom you might have difficulty in doing a job. Please describe this person on the form below.

Remember that there are no right or wrong answers. Work rapidly; your first answer is likely to be your best. Please do not omit any items and we mark each item only once.

Friendly_____:_____:_____:_____:_____:_____Unfriendly

Cooperative_____:_____:_____:_____:_____:_____Uncooperative

Quits easily_____:_____:_____:_____:_____:_____Keeps trying

Calm_____:_____:_____:_____:_____:_____Upset

Confident_____:_____:_____:_____:_____:_____Unsure

Immature_____:_____:_____:_____:_____:_____Mature

Bold_____:_____:_____:_____:_____:_____Timid

Ungrateful_____:_____:_____:_____:_____:_____Grateful

Energetic_____:_____:_____:_____:_____:_____Tired

Impatient_____:_____:_____:_____:_____:_____Patient

Thoughtless_____:_____:_____:_____:_____:_____Thoughtful

Frank_____:_____:_____:_____:_____:_____Secretive

Careless_____:_____:_____:_____:_____:_____Careful

Easygoing_____:_____:_____:_____:_____:_____Quick-tempered

Practical_____:_____:_____:_____:_____:_____Impractical

Boastful_____:_____:_____:_____:_____:_____Modest

Intelligent_____:_____:_____:_____:_____:_____Unintelligent

Gloomy_____:_____:_____:_____:_____:_____Cheerful

Responsible_____:_____:_____:_____:_____:_____Undependable

Efficient_____:_____:_____:_____:_____:_____Inefficient

APPENDIX B

Perception of leader's position power by group members

Your Name ______________________________ Group # __________

Below are a number of questions related to the functions of the leader of your group. Simply draw a circle around the response which you choose for each of the questions. I need your responses in order to further analyze the data obtained earlier. Thank you very much for filling out the questionnaire.

1. Compliments from the leader are appreciated more than compliments from other group members. true false
2. Compliments are highly valued, criticisms are considered damaging. true false
3. Leader can recommend punishments and rewards. true false
4. Leader can punish or reward members on his own accord. true false
5. Leader can effect (or can recommend) promotion or demotion. true false
6. Leader chairs or coordinated group but may or may not have other advantages, i.e., is appointed or acknowledged chairman or leader. true false
7. Leader's opinion is accorded considerable respect and attention. true false
8. Leader's special knowledge or information (and members' lack of it) permits leader to decide how task is to be done or how group is to proceed. true false
9. Leader cues members or instructs them on what to do. true false
10. Leader tells or directs members what to do or what to say. true false
11. Leader is expected to motivate group. true false
12. Leader is expected to suggest and evaluate the members' work. true false
13. Leader has superior or special knowledge about the job, or has special instructions but requires members to do job. true false
14. Leader can supervise each member's job and evaluate it or correct it. true false
15. Leader knows his own as well as members' job and could finish the work himself if necessary, e.g., writing a report for which all information is available. true false
16. Leader enjoys special or official rank and status in real life which sets him apart from or above group members, e.g., military rank or elected office in a company or organization. true false
17. Leader is given special or official rank by experimenter to simulate for role-playing purposes, e.g., "You are a general" or "the manager." This simulated rank must be clearly superior to members' rank and must not be just that of "chairman" or "group leader" of the group during its work period. true false
18. Leader's position is dependent on members; members can replace or depose leader. true false

APPENDIX C

Sociometric Questionnaire

People differ in their personalities as well as in their abilities. The questions listed below are designated to get some idea of how you perceive the personalities and abilities of your peers.

Each of the questions asks you to name the three students in your half of the class who, in your opinion, best fit the statement. Please name your choices in order of preference, i.e., 1st choice, 2nd choice, and 3rd choice.

Your answer will be kept strictly confidential. Only the researcher collecting the data (Mr. Reilly) will see your answers.

1. If there were a sudden hospital emergency demanding the help of all your fellow students (Class of 1970) and you were assigned to work in teams, which of the students in your half of the class would you prefer as your leader?

	Student Number	Name of Student
1st choice	______________	______________________________
2nd choice	______________	______________________________
3rd choice	______________	______________________________

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2. Concerning question #1 above, under the same circumstances, which of the students in your half of the class would you least prefer as your leader? Your 1st choice should reflect the person you least prefer as your leader, your 2nd choice should reflect the person you could tolerate a little bit more, and so on.

	Student Number	Name of Student
1st choice	______________	______________________________
2nd choice	______________	______________________________
3rd choice	______________	______________________________

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3. If you were assigned to a team of four student nurses to assist in planning a party or recreation period for guests at a nursing home, which three students in your half of the class would you most want to have in your group?

	Student Number	Name of Student
1st choice	______________	______________________________
2nd choice	______________	______________________________
3rd choice	______________	______________________________

4. If you had some personal matters which you wanted to talk over with someone, which three members in your half of the class would you most likely go to?

	Student Number	Name of Student
1st choice	______________	______________________________
2nd choice	______________	______________________________
3rd choice	______________	______________________________

5. Which of the students in your half of the class would be best in helping a new student get acquainted with clinical experiences?

	Student Number	Name of Student
1st choice	______________	______________________________
2nd choice	______________	______________________________
3rd choice	______________	______________________________

6. Which three students in your half of the class do you like best personally? Please list them in order of your preference.

	Student Number	Name of Student
1st choice	______________	______________________________
2nd choice	______________	______________________________
3rd choice	______________	______________________________

7. If your half of the class visited an unfamiliar city, and you decided to go out "on the town" one evening, which of your fellow students (in your half of the class) would you prefer to go out with?

	Student Number	Name of Student
1st choice		
2nd choice		
3rd choice		

APPENDIX D

Acceptance of leader by group members

Your Name ______________________________ Your Group Number _____________

Your I.D. No. __________ Your Group Leader's Name ______________________

1. Do you feel that you are really a part of your discussion group that now meets for pre- and post-conferences?
   ____Really a part of my discussion group.
   ____Included in most ways.
   ____Included in some ways but not in others.
   ____Not ascertained.

2. If you had a chance to do the same kind of group participation in another group that you are now doing in your present discussion group, how would you feel about moving?
   ____Would want very much to move.
   ____Would rather move than stay where I am.
   ____Would make no difference to me.
   ____Would rather stay where I am than move.
   ____Would want very much to stay where I am.
   ____Not ascertained.

3. How well do you anticipate being able to work with the leader who has been assigned to your group?
   ____I anticipate being able to work effectively with her at all time.
   ____I anticipate being able to work effectively with her most of the time.
   ____I anticipate being able to work effectively with her about 50% of the time.
   ____I think that for the most I will not be able to work effectively with my group leader.
   ____I will not be able to work effectively with my group leader at all.

4. How do you think the rest of your fellow group members feel towards your group leader?
   ____The group feels that our leader will be a very poor leader--she won't be able to influence the group.
   ____The group feels that our leader will have some influence in our group but not very much.
   ____The group feels that our leader will be effective about 50% of the time.
   ____The group feels that our leader will be an effective one most of the time.
   ____The group feels that our leader will be very effective with our group all of the time.

5. How does your present discussion group compare with other groups you have worked with on the following points?

	Better than most	About the same as most	Not as good as most	Not ascertained
a. The way the students get along together	_____	_____	_____	_____
b. The way the students stick together	_____	_____	_____	_____
c. The way the students help each other in your discussion	_____	_____	_____	_____

APPENDIX E

INTERACTION PROCESS SCORES: A REVISION OF BALES'S INTERACTION PROCESS ANALYSIS

A Revision of a Systematic Observational Technique[1]

Systematic observational techniques differ in the level of description that is intended for the resulting variables. To illustrate this in the most simple way, we may suggest that Bales' interaction process analysis categories are designed to observe the smallest units of interaction as they occur. A simple type of score that can be devised is the amount of interaction in a given category for a given period of time. It is possible to suggest that the category that is observed should be labeled "shows solidarity," and then to approach the observation of the same behavior by other means. For example, observers may rate the behavior of the individual in a holistic manner according to how much solidarity the individual shows. Or peers in a group may rate each other, and on the basis of a sum we have an estimate of the amount of solidarity that peers perceive a person to show.

There is something inherently different about Bales' observation system and the other two kinds of ratings. Bales' variable of shows solidarity weighs each action equally, and it does not transcend the interaction of the given moment in terms of the more general context of the social aggregate that is being observed. Thus, a person who is high on the Bales interaction category may be viewed by his peers and the external observer as someone who is agreeable, who is supportive, who is responsive, but it is not necessary that he be viewed as showing solidarity. Rather, the cumulation of responses in an interaction category may have consequences in the perception of both objective and participatory observers that are quite different in meaning or much broader in meaning than the category that is being scored. The person who is rated as high in showing solidarity may be the one who is responsive primarily at the strategic and important moment for the group rather than most often.

We ordinarily view the process of social interaction as one of constant modification of behavior of the participating members and of developing a common frame of reference within the group and in terms of the external situation. It is difficult to view the process as a symmetric and balanced one, however orderly it is. For example, more attention of the group members is given at one time to the internal dynamics in terms of handling relationships than to the task or the external relationships of the group, and as attention is given to one area, neglect is restrictively implicit for another. Under these circumstances it is not appropriate to suggest that all actions are equally relevant in regard to consequences as they are viewed in the more global perception of the peer or the trained observer.

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1. Reprinted from: Borgatta, E. F. A systematic study of Interaction Process Scores, peer and self-assessments, personality and other variables. Genetic Psychology Monographs, 1962, 65, 269-290. Reprinted by permission of the Journal Press.

In these terms, some revisions of Bales' category system might be effected that would be more useful in understanding both the dynamics of the group behavior and also the consequences of the ratings that are made by both peers and trained observers. On one side, this has led to a feeling that a distinction between an active and a passive response in some of Bales' categories could be emphasized and would serve to identify the importance of intensity of action. For example, in terms of shows solidarity, results from pooling a greeting with a statement that definitely and purposively raises the status of another may leave one with some question about interpretation. The difference is often between someone saying "Hi" and saying "You know that's one of the best ideas I've heard in a long time." The former may be viewed as a minimum response to the requirements of the situation while the second may be seen as an active transcending of the minimum requirements.

The revision of Bales' categories undertaken at this point is designed to sharpen up some of the differences between a minimum response (or run of the situation response) and an active response that transcends the minimum requirements set by the situation. This was not the only thing considered, however. It did not seem appropriate to deviate so much from the form of categorization that all its virtues would be lost. In fact we wished to retain the category system utilized by Bales intact as much as possible to maintain continuity and comparability with previous studies. Implicitly, we also wished to maintain a category system because we wish to understand perceptions in terms of the actions persons manifest. It should be noted, however, that this was not the only additional consideration, nor the prime one. In the more complex analysis of the constitution and reconstitution of groups, at least two independent sources for examination of differences that occur seemed appropriate. Scores based on ranking and scores based on a category system satisfy the requirements of independent measures.

In our examination of Bales' category system we found that, while it was, for all practical purposes, exhaustive in its design, the attempt at symmetry masked some important categories of behavior that might well be discerned by a trained observer. Recognizing that Bales deliberately attempts to keep the category system at a formal level with only surface interpretations, it still seemed possible to divide some of the categories in order to take into account different classes of behavior. As a specific example, the very large category of "Gives opinion" pools many different classes of behavior. It is a large category and thus could feasibly be subdivided. In this instance one particular class of information that seemed important to distinguish among the opinions a person could give were those related to the self and its analysis. Such a category has considerable clinical interest. Another subdivision of the same category could be opinions that are essentially acts of verbal aggression toward a person who is not present. Again, this is a category for which theoretical interest is considerable.

The revision, as it may be seen below, was thus an attempt to reorder the symmetric and balanced system of Bales into one that corresponded more directly to some important categories of behavior in applied and research applications. The intention was not to make the interpretation of the acts any deeper than they are in Bales' scoring, but merely to subdivide and reorganize in part what appeared to be important distinctions from other sources of theory.

The revision proceeded on the basis of inability to generalize findings from other studies because of the nature of the categories utilized rather than the principle of categorization per se. Revision also attempted to take into account experience that could be gained from other types of testing and other category and rating systems. While all available systems were reviewed, it should be remarked that there was an insistence in this revision in the maintenance of the small scoring units as in Bales' system and a resistance to move in the direction of ratings. Similarly, we were not concerned with developing a category system that allowed for the scoring of all possible kinds of actions so much as providing one that would allow us to observe a few more, but strategic, categories of action. In essence we were redrawing a few lines and adding a few rather than making a break with Bales' system.

THE REVISED IPS CATEGORIES[2]

Category 1 (1a). Common social acknowledgment: This category is composed primarily of greetings and social acknowledgments, including approaching and "breaking the ice" in initial participation. In this category should go the common friendly gestures, the routine acknowledgments such as the offer of a cigarette or the routine thanks in accepting one.

Category 2 (1b). Shows solidarity through raising the status of others: This category includes the deliberate or effective raising or enhancing the status of others. This may be done collectively or through individual praise or enthusiastic acceptance of the other. Characteristic expressions would be: "We've done well." "That's a good way to put it." "I think you summarized that beautifully." Included here also are the "buttering up" approaches such as "John, you always do such a good job in this kind of business. (Why don't you outline what we should do?)" Included also are statements of direct identification such as "I certainly can see your point here." This category also is scored in behavior that is directed toward the creation of "togetherness," as in the offers of assistance and of working closer together in a collaborative way. In general, actions are scored in this category that are directed toward the building of the solidarity of the group, whether these are through directly raising the status of an individual by coordinating the activities of members to assist one or another, or to alleviate conflict that may exist. The contrast between 1 and 2 is directed toward routine actions implicit in all social procedures, whereas 2 is defined more actively in terms of response meant to intensify the relationship in a direction of cohesiveness.

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[2] References to the Bales system indicating where the current category would belong in the original system are given in italics in parentheses.

In the original publication by Bales joking was scored in Category 2, but subsequently it has been scored in Category 1 or Category 12. If joking is directed toward the amusement of the group rather than as aggression toward some individual member of the group it should go into Category 1. If the aggression is directed to a member of the group and is stronger than the showing of solidarity in its consequences, it should be in Category 17.

Category 3 (2). Shows tension release, laughs: The most common response for this category is that of laughter subsequent to some event or joke. It should be distinguished, however, from the nervous laughter, smiles, grins, and other responses that often occur as an indication of tension rather than tension release. Habitual smiling or laughing to responses that is apparently a defensive action and does not indicate good feeling, should be scored in Category 15. Each wave of laughter should be scored as a separate response, and if the laughter should see-saw from one subgroup to another or from one person to another, each such movement of the laughter should be scored. Other indications of being pleased should be scored in Category 3. However, if the pleasure indicated is so obvious as to give the other pleasure, it should be scored as Category 2.

Category 4 (3a). Acknowledges, understands, recognizes: This category includes all passive indications of having understood or recognized the communication directed toward the recipient. The most common score for this category is a nod or saying: "Uhuh," "Yes," "O.K.," "Mum," "Right," "Check," "I see," "That may be, but..." In general, items are scored into this category if they indicate the acceptance of an item of communication, but this does not require agreement with the communication, the presence of which would place the response in Category 5.

Category 5 (3b). Shows agreement, concurrence, compliance: This category includes all items that indicate agreement with the speaker or with a conclusion that has been presented to the group. The respondent may vote to accept a decision or may indicate that it is correct, or that he will comply with the decision or suggestion that is made. This may constitute the suggestion that the action is agreed upon, that the individual is willing to cooperate, that the individual sees it in the indicated way, that the speaker is correct in his assertion, that the assertion is correct. Typical expressions might be: "That sounds right to me," "I agree with that," "I agree with John's point," "I think that John is correct in his assertion," "I think we ought to do that also," "Yes, that's right," "I feel the same way you all do." It should be noted that if the agreement is entirely passive, i.e., essentially nonresistance, it should go into Category 4. If the agreement is complete and overwhelming and obviously raises the status of the speaker or the group, then it should be scored in 2.

Category 6 (4a). Gives a procedural suggestion: This category includes actions that are directed toward organization for attaining a given goal, commonly by dividing responsibility or by dividing the task. Sample statements of this sort are: "Possibly we ought to organize to do this." "Suppose that you act as recorder." "I think we ought to organize what we are going to do so that we'll know how we are working." "I can handle this kind of problem if some of you can take care of the others." "Why don't you take this kind of role, and then I'll take this and John can take that." In this category are also included procedural suggestions of a normative nature when they are directed to some immediate action such as: "You should do this," "Why don't you do this?" "Please try to do this." When such normative suggestions are future oriented they should be scored as giving opinion below. When the statements are of such strength that they do not imply autonomy, but are a demand, then they should be scored in Category 17. If the demands are normal expectations for the situation, however, and conformance would naturally be expected in the situation, the procedural suggestion would be scored in Category 6.

Category 7 (4b). Suggests solution: In this category are placed statements that attempt to resolve the problem accepted by the group or defined for the group directly. Included here are such statements as: "I think that the point of the whole discussion that we're supposed to hold is to come out with the answer that the democratic way is the best." "I think the answer is there are 80 dots." "Colonel Blimp should go for a long ride and never come back." "Do you think the answer to your problem is that it is caused by some emotional disturbance?" "I believe that if we make one more move in this direction we will have the answer." "Don't you feel that if the Colonel took the lady the whole problem would be resolved in time?"

Category 8 (5a). Gives opinion, evaluation, analysis, expresses feeling or wish: This category includes the general evaluative or opinion expressing comments of the actor, generally in the form of drawing a conclusion or expressing an opinion about a future action. Typical expressions would be: "I think Colonel Blimp was probably a little confused at this point." "I sort of like to relax when I work." "I want to find the solution to this problem." "I wish this problem had been defined better for us." "We should come up with a good solution." "They shouldn't step on each other's toes." "It's possible that the weather had some effect on his behavior."

Category 9 (5b). Self-analysis and self-questioning behavior: In this category goes behavior of a relatively objective self-evaluative sort. If it is self-questioning in an anxiety sense it is scored in Category 15. Scores placed in this category would include the following types: "The reason I probably did this was that I wasn't paying attention to what he was saying." "I just wasn't aware of what I was doing." "It makes me wonder why I took this kind of self-attitude." "Sometimes I am lonely and I don't know why." "I wish I could do that but I'm not good enough." "If I could only do that I would probably feel much better."

Category 10 (5c). Reference to the external situation as redirected aggression: In this category go all actions of aggression, hostility, nastiness, etc., that are directed out of field. There are the negative opinions that are expressed about a third person outside the group, about the administration that organized the group, about superiors, about others who are not present. Comments may include: "Well, you know how he always behaves, he's just a louse about these things." "She sounds like an old prude to me." "I don't know why these people don't give us more attention when we need it." "Well, this is a lousy outfit anyway, the way it's organized." Such statements may become group status raising, as when the third party is the subject of hostility for the organization of the group morale, such as the making of the third party the butt of a joke. If it is an effective joke it is scored in Category 2; if it tends to be more hostile than funny, the joke is scored in Category 10.

Category 11 (6a). Gives orientation, information, passes communication: In this category go the actions that are directed toward passing objective information, so far as can be defined in a situation. "It seems that that night it was raining." "On top of the hill there was a great fire." "I believe there are eight wheels to a problem." "Colonel Blimp had seven secretaries. One was a short one, one was a tall one, one was in between, and the four others were nondescript." "I am 18 years old." "My son's name is John." "My mother died of cancer." "The therapist has gray hair."

Category 12 (6b). Draws attention, repeats, clarifies: In this category are placed items that are designed to draw attention to a problem or a situation or a statement (or the person about to make same). For example: "Listen, John,..." "This is the issue I'd like to consider." "If I may take up that question,..." "I believe that what you said was that the cow was brown." "In review of our previous comments, it would seem that what we said is that he ate olives." Clarifications of meaning in a monologue are scored here. Elaboration and expansion are scored in the category of the original statement.

Category 7. Asks for orientation information, clarification: In this revision of the category systems this is a void cell. The category has not appeared important in data analyses, and these responses appear better handled in other categories. For example, when one is listening to a conversation and misses a piece of information and asks: "What?" or "What was that?" the meaning may be interpreted as suggesting another repeat or clarify (6), or possibly even as drawing attention (12). On the other hand, if the respondent is answering with some embarrassment or disorientation, the response may be scored in Category 15. If the implication is that the speaker has not made the statement clear and is therefore inadequate, then it may be scored in Category 17, and similarly if the question implies incredulity. Questions that are phrased in terms of "Where are we?" or "How do we stand?" essentially suggest: "Let's review our activities." Therefore they should be scored as procedural suggestions (6), as should be such implicit questions. Questions that are of information or orientation that serve the purpose of ice-breakers should be entered into Category 2, unless they are more obvious expressions of anxiety or insecurity, in which case they get scored in Category 15. For example: "What time is it?" "How much time do we have left?" "Who was appointed?" In this sense, Category 1 (rather than 6) receives responses that are directed toward continuity, including some of the extremely routine, emotionally neutral suggestions such as: "Please pass the ashtray." "Please repeat what you said so that we can understand it better." "Do you mean that Colonel Blimp was a fuddy-duddy?" (Assuming he has been so described.)

Category 13 (8). Asks for opinion, evaluation, analysis, expression of feeling: While the implicit eliciting response is scored in Category 1, the more direct one in regard to expression of opinion, evaluation, analysis, or feeling is scored in 13. Examples may be as follows: "What do you think about this?" "Tell me how you feel about this." "Go ahead, say what you like." "I'd appreciate your reaction to this." "Do we have any other opinions on this?" "I wish you would indicate your feelings (thoughts, conclusions, cogitations, insights, etc.) on this matter." "Do you think we can finish in time?" "Do you think Colonel Blimp was that kind of a person?" "What do you believe?"

Category 9. Asks for suggestion, direction, possible ways of action: This is also a void category. In particular, the question: "What do you suggest?" may be interpreted as the direction on the part of the speaker to another to proceed in a given way. Thus, requests for suggestions are to be scored as suggestions themselves. The exception in this case is where a person requests suggestion from an apparent inadequacy or anxiety. In this case the question is scored in Category 15. Broader questions asking for suggestions may fall into Category 1, that is, of breaking the ice. Typical of these would be: "What shall we talk about today?" "Does anyone have suggestions about how to start?"

Category 14 (10). Disagrees, maintains a contrary position: This category includes primarily those responses that are indications of disagreement with the contents of the statement or position of another. It may be a simple statement such as: "I don't agree with this." "I would have thought it had been otherwise." It may also be expressed by direct resistance such as refusing to be convinced or acquiescent. The negativistic response is thus scored in this category provided it is not directly hostile and antagonistic, in which case it would be scored in Category 17. Negativism in this sense includes resistance to suggestions, opinions, and other approaches of the other members. Emotional rejection in a more direct sense should be scored in Category 17.

Note: The objective response of "No" sometimes is a mere acknowledgment of the statement that has been made. Thus, the simple incidence of the word "no" does not mean disagreement any more than "yes" means agreement, and both of these may be acknowledgments that something has been understood and are to be scored in Category 4. In the discussion of a debated point, statements that are persistent and in contradiction to positions held by others, are scored as disagreements. In general, however, actions that are directed to essentially annihilate the other in a social or psychological sense are to be scored in Category 17. The hostile, impersonal, unapproachable and forbidding responses should be scored to Category 17 when they occur in this sense, unless they are more prominent as assertions of the self than the annihilation of the other, in which they are scored as 18.

Category 15 (11a). Shows tension, asks for help by virtue of personal inadequacy: In this category are scored the general characteristics of nervousness, including the tapping of fingers, squirming, toying with pencils, cigarettes, cigarette lighters, etc. Where the behavior appears to be entirely habitual on the part of the respondent, it should be scored only each time that he apparently draws attention of the observer or of the members of the group through such behavior. While this is an arbitrary method of scoring such behavior, it is not less arbitrary than doing so on a time basis, and may be much more meaningful since the observer is constantly scanning the group and should be aware of the fluctuations of responses of the individual. Included in this category also are the startle or anxiety responses of the individual, the displays of obvious fluster and disorganization, including stammering, flushing, rocking, obvious perspiration, or other similar signs. False starts in speaking, indicating that the person is nervous, should be scored in this category. Obvious withdrawal behavior of any type, such as moving out of field by leaning back in a chair when all others are moving forward, etc., should be scored here. In general, all direct indications of social and psychological inadequacy are to be scored in this category, including the responses that indicate being out of step, such as being the focus of attention because of inappropriate comment, so-called hollow laughing, etc. Any indication of response in this direction indication of response in this direction indicating guilt, shame, or other inadequacy should also be so scored. However, being self-critical or questioning in the more detached manner of merely examining one's self should be scored in Category 9 indicated above. That is, detached self-criticism, whether positive or negative, should be scored as Category 9. Requests for assistance, when they carry the connotation of inadequacy of a personal sort, should be scored in this Category 15. Requests for assistance may have a cohesiveness function also, and in these cases should be scored in Category 2.

In general, thus, this category receives behavior that is associated with the inadequacy of the individual as expressed either through nervous behavior or other signs of anxiety, or withdrawal. Requests for help, however, need not fall into this category and may belong in other categories above. Similarly, withdrawal may be an indication of negativism as scored in Category 14, or rejection of the other as scored in Category 17. Displays of inattentiveness or boredom and other forms of rudeness are scored in Category 17.

Category 16 (11b). Shows tension increase: In this category are scored the periods of tenseness that grow largely out of impasses or bankruptcy of conversation. Most of the scores that fall into this category are the awkward pauses that occur for a group as a whole. These should be scored in terms of the apparent cycles of these pauses, which are usually punctuated by clearing of throats, looking around by one person to another, etc. For the whole group however, it is sometimes noted that the level of participation grows more tense because of the general personal involvement of the group. When this is noticed for the group as a whole, a group score should be given also. In general, Category 16 is a score that is applied to the group as a whole only.

Category 17 (12a). *Shows antagonism, hostility, is demanding*: In this category are all actions that are directed to be either socially or psychologically destructive of the other or his position. This includes the use of the ad hominem argument, the calling of names or indicating that one's motives are questionable, of directly and emotionally contradicting the other, or suggesting that he has no reasonable grounds on which to stand. Negativism that is personal and flouting of authority is scored in this category, as are other actions of wilfulness and deliberate nonconformity. Harassing and taking advantage of the other through aggressive personal attack, even when directed to humor, is scored in this category. This includes techniques of confrontation, of ignoring the other's position as though he did not exist, ridiculing, being sarcastic, etc.

Category 18 (12b). *Ego defensiveness*: In this category are placed all actions that are direct expressions of assertive ego defensiveness. Denials of others that are stated in the first person, asserting one's own authority, are scored here. For example, "I am too right." "I don't see how you can possibly criticize my position." "I wouldn't say that!" Also included in this category are direct attempts to attract attention through being associated with self-approval, including actions of braggadocio, etc. In actions of rivalry, if the attempt is the destruction of the other, it is scored in 17, if it is the defense and assertion of the self, it goes into Category 18. In Category 18 also go the scores that may be classed as self-righteous and indicating the superiority of the self over others. Similarly, paranoid type responses, unless they are more obviously indications of inadequacy, should be scored in Category 18.

SUMMARY OF THE REVISED CATEGORIES[3]

1 Common social acknowledgments (1a)
2 Shows solidarity through raising the status of others (1b)
3 Shows tension release, laughs (2)
4 Acknowledges, understands, recognizes (3b)
5 Shows agreement, concurrence, compliance (3b)
6 Gives a procedural suggestion (4a)
7 Suggests solution (4b)
8 Gives opinion, evaluation, analysis, expresses feeling or wish (5a)
9 Self-analysis and self-questioning behavior (5b)
10 Reference to the external situation as redirected aggression (5c)
11 Gives orientation, information, passes communication (6a)
12 Draws attention, repeats, clarifies (6b)
13 Asks for opinion, evaluation, analysis, expression of feeling (8)
14 Disagrees, maintains a contrary position (10)
15 Shows tension, asks for help by virtue of personal inadequacy (11a)
16 Shows tension increase (11b)
17 Shows antagonism, hostility, is demanding (12a)
18 Ego defensiveness (12b)

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[3] Major relationship to Bales's IPA categories is indicated in italics in parentheses.

A NOTE ON SCORING PROCEDURES

The protocol in this chapter and those in the next are, with one exception, transcripts of sessions. As such, much of the observable interaction is lost. Tension, for example, cannot be observed, nor can gestures and other "nonverbal communication." In addition, there is a loss of direct information of who talks to whom except in the case of the two-person group.

Technically, scoring of social interaction can be done in many ways. Moving paper tapes, banks of buttons wired to counters, stenotype machines, IBM punches, adding machines, and other devices can be utilized for scoring and accumulating summary scores. The complexity of the research should determine the equipment needs, and most persons may find that tally sheets, such as the forms used for the "scoring" in this chapter and the next, are adequate for their needs.

Who-to-whom scoring by category can be coded with numbers simply, and this a coded with numbers simply, and this a common procedure. For example, 1 2 12; 2 1 12; 3 0 1 could be the code for the interaction sequence: Person 1 does an act in category 12 to person 2; person 2 does an act in category 12 to person 1; and person 3 does an act in category 1 to the group as a whole. If the who-to-whom information is not vital and only the information of who the initiator is needs to be recorded, then this can be done with a simpler numerical code. For example, leaving out the center figure in the above sets of three numbers, the sequence becomes 1 12; 2 12; 3 1.

An alternative, which is illustrated in some of the forms provided in this volume, is to have columns correspond to persons and rows correspond to categories. Locations on the sheet of paper substitute for full coding of the interaction. When this is the case, scoring of interaction in the form of who-does-what is simply a matter of recording tally marks in the proper spaces. If sequence information is required it is probably best to retain the row identification of categories and simply to record who-to-whom designations in the proper rows with spacing of these designations moving from left to right on the sheet to indicate the sequence. This corresponds directly to using a moving paper tape. Sheets can, in addition, be used to correspond to given time periods of observation. However, if actual who-to-whom and sequence information is not going to be used in analysis - and a review of small group research will show that only limited information of this type has actually been used - the researcher should seriously consider the value of scoring in tally form. This form of scoring provides summary information easily. Researchers need to balance the additional value of detailed data against additional clerical costs. The protocols in these chapters correspond to recording information of who-does-what in tally form.

APPENDIX F

Leader's Grade Assignment Sheet

Leader's Name ____________________ Leader's I.D. No. ____________

Your Group No. ____________________ Problem No. ____________

Names of Junior observers ____________________ Date of group meeting ____________

____________________ Time of meeting ____________

GROUP MEMBERS PRESENT

I.D. #	Name of Group Member	Grade for Cooperation*	Remarks
_____	____________________	_______	_______________
_____	____________________	_______	_______________
_____	____________________	_______	_______________
_____	____________________	_______	_______________
_____	____________________	_______	_______________
_____	____________________	_______	_______________
_____	____________________	_______	_______________
_____	____________________	_______	_______________

*Grade Interpretation

A. Excellent cooperation; helped the group reach its goal in a cooperative and contributive fashion.

B. Above average cooperation; added to the group's solution to the problem in an above average fashion.

C. Average cooperation; did contribute to the group's solution to the problem but not in an above average way.

D. Did not cooperate with the group in solving the problem; in some instances deterred the group from reaching its goal.

F. A definite lack of cooperation; made it extremely difficult for the group to reach its goal of solving the problem.

APPENDIX G

Medical-Surgical Nursing Clinical Practice Work Sheet

No. 2 - Objective: To promote for the patient's comfort.

1. What do you mean by physical comfort? Does this differ from your patient's concept of comfort?
2. What physiological and psycho-social alterations in his condition, as identified by you or your patient, were the causes of any physical discomfort?
3. What nursing intervention was initiated to alleviate the discomfort? What opportunity for self-assistance was provided?
4. Through your observations, how was your patient able to provide for his own physical comfort?

References

1. Beland, pp. 122[illegible]-1228.
2. Jarratt, Virginia, "The Keeper of the Keys," *American Journal of Nursing*, July 1965, p. 68.
3. Matheney, Nolan, *Fundamentals of Patient-Centered Nursing*, pp. 149-156.
4. Nordmark and Rohweder, Science Principles Applied to Nursing, Philadelphia, J.B. Lippincott Co., 1959, pp. 171-180.
5. Shafer, Sawyer, et al., *Medical-Surgical Nursing*, St. Louis, C.V. Mosby Co., 1967, pp. [illegible]-76.
6. Programmed Instruction on Pain:
   "Part I: Basic Concepts and Assessment," *AJN* May 1966, p. 1085.
   "Part II: Rationale for Intervention," *AJN* June 1966, p. 1345.
7. McClain, Esther, and Gragg, Shirley, *Scientific Principles in Nursing*, St. Louis, C. V. Mosby Co., 1966, pp. 125-142.

No. 3 - Objective: To maintain the patient's appropriate motor function and posture.

1. In a 24 hour period of bedrest, the average person loses 3% of his muscle tone. Design a specific program for your patient which will either maintain or regain appropriate muscular-skeletal function. Include type and frequency of exercise and positioning.
2. What are muscle-setting exercises? When would these be appropriate in a therapeutic regime?
3. Name and discuss 4 specific functions of a person which need mobilization for effective use.

References

1. Edmonds, Ruth, "Hazards of Immobility: Effects on Motor Function," AJN April 1967, p. 780.

2. Fuerst, and Wolff, Fundamentals of Nursing, Philadelphia, Lippincott, 1964, pp. 319-358.

3. Harper and Henderson, Textbook of the Principles and Practice of Nursing, New York, Macmillan, 1955, pp. 470-478, 481-493, 496-500.

4. Kelly, "Exercise for Bedfast Patients," AJN, October 1966, pp. 2209.

5. Larson, and Gould, Calderwood's Orthopedic Nursing, St. Louis, C. V. Mosby Co., 1953, pp. 21-55.

6. McCain, "Nursing by Assessment--Not Intuition," AJN, April 1965, p. 82.

7. Nordmard, and Rohweder, Science Principles Applied to Nursing, Philadelphia Lippincott, 1959, pp. 132-155.

APPENDIX H

Problems Solved by the Groups

Group Problem #1: Body Damage (unstructured)

A. The Situation

Mr. T. was injured in a corn picker accident. It was necessary to amputate his right arm below the elbow. He is right handed. He has been hospitalized for fourteen days. He will be dismissed within a week.

Mrs. T. has told the children; Ann age 3, Timmy age 7, and John age 12 that "Daddy's arm has been hurt."

B. Your Situation

You are the nurse working with Mr. T. and assisting Mrs. T. in her preparations for Mr. T.'s return home. What plans could be made to prepare for the father's return home?

Group Problem #2: (structured)

A. Terms related to solution of problems of insult or injury to body image.

Reorganization
Denial
Resolution
Developing Awareness

B. 1. Place the terms in correct order.

2. Define the terms as they appeared in the readings assigned for "body image."

3. List the functions of the nurse under each term as described in the readings.

Group Problem #3: (unstructured)

A. The Situation

Mr. Murphy, a 35 year old successful businessman, has just suffered a second massive coronary thrombosis. His life expectancy depends upon whether he follows his doctor's orders not to return to work.

His wife has a college degree and wants to return to her former career. Her husband prefers that she remain at home.

There are four children: two boys, 12 and 7, two girls 4 and 1.

B. Problem

As a nurse working with the family how would you help the family in this situation?

Group Problem #4: (structured)

A. The Situation

Betty Frieden, in her book, The Feminine Mystique, defines what she means by the concept "feminine mystique."

1. How does Frieden define this concept?

2. In terms of your other readings list and explain five key psychological differences between men and women as seen in the terms "masculinity" and "femininity." Be specific. Mention the source of your material if you can.

Group Problem #5: (unstructured)

A. The Situation

Your group consists of school nurses working in high schools (grades 9-12), in a middle class environment. One of your responsibilities at this point is to work in an advisory capacity with your school's administration in the development of the school's educational program concerning venereal disease.

Your task is to submit a workable plan for such an educational program. The plan will in turn be submitted to your respective principals.

Group Problem #6: (structured)

A. The Situation

Since syphilis is one of the most prevalent venereal diseases in the U.S. your group is to discuss its epidemiology and to submit in your paper all relevant information (in the time allowed of course) covered in your readings regarding the following points:

A. Organism and transmission

B. Stages

  1. Manifestations
  2. Detection and diagnosis

C. Treatment

  1. When?
  2. How?
  3. How effective?

D. Incidence, prevalence, social significance

E. Nursing implications

  1. Hospital asepsis
  2. Case finding

Group Problem #7: (unstructured)

Jimmy Brand, a five-year-old boy was admitted to the hospital with 20% second degree burns on his chest and upper right arm. He had pulled a pot of hot coffee over him in his home.

You, the nurse, are to explain to Jimmy the concept of pain in a meaningful way.

Group Problem #8: (structured)

Mrs. Smith is a 45-year-old white female from Milwaukee, Wisconsin. She has 4 children. Her husband is a truck driver.

You enter Mrs. Smith's room at 4:00 P.M. She had an abdominal hysterectomy this morning, returned from PAR at 10:30. She is crying and complains of pain in her abdomen as well as pain in her back and neck. She appears almost panic stricken.

a. What questions would you ask her and what observations would you make to assess her pain?

b. What nursing measures would you carry out to relieve her pain and prevent further pain?

Please be specific.

Group Problem #9: (unstructured)

You are a nursing team discussing Mr. S., a 50-year-old accountant, who has terminal cancer and has been told he has perhaps a year to live. His wife, also 50, has never worked outside her home. His daughter, 25, who plans to be married in seven months, has been living at home.

Submit your anticipated plan of work with this family.

Group Problem #10: (structured)

Fatal Prognosis and Death

A. Discuss the various stages of grief

B. List and explain each stage, its characteristics, time span, purpose, and possible problems that may result.

APPENDIX I

1. Common social acknowledgments										
2. Shows solidarity through raising the status of others										
3. Shows tension release, laughs										
4. Acknowledges, understands, recognizes										
5. Shows agreement, concurrence, compliance										
6. Gives a procedural suggestion										
7. Suggests solution										
8. Gives opinion, evaluation, analysis, expresses feeling or wish										
9. Self-analysis and self-questioning behavior										
10. Reference to the external situation as redirected aggression										
11. Gives orientation, information, passes communication										
12. Draws attention, repeats, clarifies										
13. Asks for opinion, evaluation, analysis, expression of feeling										
14. Disagrees, maintains a contrary position										
15. Shows tension, asks for help by virtue of personal inadequacy										
16. Shows tension increase										
17. Shows anatagonism, hostility, is demanding										
18. Ego defensiveness										
19. Asks for repeat, clarification										

3

APPENDIX J

Instructions for rating group solutions to problems

You are asked to grade each groups solution by using a number from 1 to 99. There will be one grade or rating assigned by you to a particular solution for each criterion mentioned on the problem sheet itself. In some cases there is only one criterion, in other cases there may be two or three.

Now back to the 1 to 99 bit. Let's assume that a criterion for a solution is its practicality--the degree to which it can realistically be implemented. If in reading a particular paper, you agree that it is very practical, you would rate the paper towards the "99" end of the continuum. Essentially, a rating of "99" means that you completely agree that the solution is a practical one. Answering "50" means you don't know how to answer, and answering "1" means that you completely disagree that the solution is a practical one.

You may use any number from "1" to "99" to indicate the extent of your agreement or disagreement. This does not mean that you have to use all the numbers from 1 to 99. Some people only use the numbers 1, 25, 50, 75, and 99. Others use 1, 10, 20, 30, 40 . . . up to 99. The point is, the distinction you make should be as fine as you feel you can make. Also the numbers along the range you feel most comfortable with. If you feel you can distinguish between 50 and 51, then do so. This procedure satisfies some people's need to make fine distinction but others who feel they cannot respond with such precision, may use fewer different numbers.

Group Number ________________________

Your Name ______________________ Problem Number ________________________

You *may* use any number from "1" to "99" to indicate the extent of your agreement or disagreement as to whether the criterion is met. This does *not* mean that you have to use all the numbers from 1 to 99. Some people only use the numbers 1, 25, 50, 75, and 99. Others use 1, 10, 20, 30, 40 . . . up to 99. The point is, *the distinctions you make should be as fine as you feel you can make*. Use the numbers along the range you feel most comfortable with. If you feel you can distinguish between 50 and 51, then do so. This procedure satisfies some people's need to make fine distinctions but others who feel they cannot respond with such precision may use fewer different numbers. For each problem, please fill out one rating sheet for each criterion.

Write out the criterion here ____

Criterion number ________________

1 10 20 30 40 50 60 70 80 90 99

....

Using the continuum as a form of reference, place your numerical rating, a number ranging from 1 to 99 here:

Your rating ________

Write out the criterion here ____

Criterion number ________________

1 10 20 30 40 50 60 70 80 90 99

....

Using the continuum as a form of reference, place your numerical rating, a number ranging from 1 to 99 here:

Your rating ________

Write out the criterion here ____

Criterion number ________________

1 10 20 30 40 50 60 70 80 90 99

....

Using the continuum as a form of reference, place your numerical rating, a number ranging from 1 to 99 here:

Your rating ________

PUBLICATIONS

INDUSTRIAL RELATIONS CENTER

1. Neil A. Palomba, Handbook for Estimation of Labor Supply by Use of a Community Survey, published jointly by the Industrial Relations Center and the Iowa State Manpower Development Council, Des Moines, Iowa, February 1967.

2. Jakubauskas, Edward B. and Palomba, Neil A., Job Vacancies in Iowa Manufacturing Establishments, March-August 1966. Published jointly by the Industrial Relations Center and the Iowa State Manpower Development Council, Des Moines, Iowa, April 1967.

3. Jakubauskas, Edward B. and Palomba, Neil A., Job Vacancies in Iowa Manufacturing Establishments, March-August 1967. Industrial Relations Center, October 1967.

4. MacKinney, Arthur C., "The assessment of Performance Change: An Inductive Example," Organizational Behavior and Human Performance, Vol. 2, No. 1, February 1967.

5. MacKinney, Arthur C., "Conceptualizations of a Longitudinal Study of Manager Performance," published by the Creativity Research Institute of the Richardson Foundation, Inc., July 1967.

6. Jakubauskas, Edward B., and Baumel, C. Phillip, Human Resources Development, Iowa State University Press, Ames, Iowa, October 1967. Available from Iowa State University Press, $4.95.

7. Jakubauskas, Edward B., "The Implications of Manpower Supply and Demand Upon Vocational-Technical Education in the West North Central States Region," paper presented at the Conference on the Policy Issues and Developmental Problems of Post-High School Vocational-Technical Education in Region VI, Ames, Iowa, November 14, 1967.

8. Jakubauskas, Edward B. "The Economics of Aging," paper presented at the First Governor's Conference on the Aging, sponsored by the Iowa Commission on the Aging, Des Moines, Iowa, October 3, 1967.

9. Hawley, Karen, The Economics of Collective Bargaining by Nurses, Industrial Relations Center, Iowa State University, Ames, Iowa, September, 1967. Available from Iowa State University Press, $4.50.

10. Jakubauskas, Edward B. and Palomba, Neil A., Job Vacancies in Iowa Manufacturing Establishments, September 1967 through February 1968. Industrial Relations Center, March 1968.

11. Palomba, Catherine A., Occupational Projections for Iowa, 1975. Industrial Relations Center, February 1968.

12. Davey, Harold W., "Present and Future Labor Relations Problems in the Meat Packing Industry," Labor Law Journal, Chicago, December 1967.

13. Palomba, Neil A., "Experience Rating: A 30-Year Controversy," Labor Law Journal, Chicago, January 1968.

14. Davey, Harold W., "Union-Management Cooperation Revisited," Business Perspectives, Winter 1968, Vol. 4 No. 2, Southern Illinois University, Carbondale, 1968.

15. Maki, Dennis R., A Forecasting Model of Manpower Requirements in the Health Occupations, Industrial Relations Center, 1967.

16. Lyons, Thomas F., Nursing Attitudes and Turnover: The Relation of Social-Psychological Variables to Turnover, Propensity to Leave, and Absenteeism Among Hospital Staff Nurses, Industrial Relations Center, 1968.

17. Davis, J. Ronnie and Palomba, Neil A., "On the Shifting of the Military Draft as a Progressive Tax-in-Kind," Western Economic Journal, March 1968.

18. Palomba, Neil A. and Jakubauskas, Edward B., An Interdisciplinary Approach to Manpower Research, Industrial Relations Center, 1968.

19. Palomba, Neil A., "Unemployment Compensation Program: Stabilizing or Destabilizing." The Journal of Political Economy, Chicago, January/February 1968.

20. Jakubauskas, Edward B. and Palomba, Neil A., Job Vacancies in Iowa Manufacturing Establishment, March 1968 through August 1968. Industrial Relations Center, August 1968.

21. Davey, Harold W., "The Uses and Misuses of Tripartite Boards in Grievance Arbitration," Developments in American and Foreign Arbitration, Bureau of National Affairs, Inc., Washington, D.C., 1968.